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REPORT DRXTH-TE-CR-82179

SURFACE SAMPLING TECHNIQUES

Bruce E. Goodwin
James R. Aronson
Robert P. O'Neil
Margaret A. Randel
Emmett M. Smith

ARTHUR D. LITTLE, INC.
CAMBRIDGE, MA 02140

SEPTEMBER, 1982

FINAL REPORT
Volume II
Certification Testing Data

Distribution Unlimited
Cleared for Public Release

prepared for

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DISCLAIMER

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ABBREVIATIONS

Abbreviation	Chemical Name
DNP	2,4-Dinitrophenol
RDX	Cyclotrimethylenetrinitramine
TNB	1,3,5-Trinitrobenzne
2,4-DNT	2,4-Dinitrotoluene
2,4,6-TNT	2,4,6-Trinitrotoluene
Tetryl	2,4,6-Trinitrophenylmethylnitramine
DPA	Diphenylamine
2,6-DNT	2,6-Dinitrotoluene
NG	Nitroglycerine
PETN	Pentaerythritetetranitrate

Arthur D. Little, Inc.

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Table I-1. Semiquantitative Certification Testing
Analytical Method Conditions

Analyte	Instrument	Column	Precolumn	Program Temp or Solvent	Retention Time	Solvent System/ Carrier Gas	Flow Rate
PETN	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ, 50 x 4.6 mm	Isocratic	6.2 min	65/35 CH_3CN/H_2O	1 ml/min
2,6-DNT	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ, 50 x 4.6 mm	Isocratic	24.6 min	35/65 CH_3CN/ .005M t-butyl	1 ml/min
NC	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ, 50 x 4.6 mm	Isocratic	30.5 min	ammonium hydroxide	1 ml/min
2,4-DNT	GC	3% OV-225 on 100/120 Gas ChromQ ¼" x 2 mm ID x 6' glass column	None	100C for 6 min 15C/min to 165C	19.90 min	5% Methane/argon	30 ml/min
2,6-DNT	GC	3% OV-225 on 100/120 Gas ChromQ ¼" x 2 mm ID x 6' glass column	None	hold 8 min 15C/min to 200 C	16.29 min	5% Methane/argon	30 ml/min
1,3,5-TNB	GC	3% OV-225 on 100/120 Gas ChromQ ¼" x 2 mm ID x 6' glass column	None	hold 6 min	30.95 min	5% Methane/argon	30 ml/min
2,4,6-TNT	GC	3% OV-225 on 100/120 Gas ChromQ ¼" x 2 mm ID x 6' glass column	None	"	28.14 min	5% Methane/argon	30 ml/min
DPA	HPLC	U Bondpack C18 4mm x 30 cm	None	Isocratic	240 sec	90/10 methanol/H_2O	1 ml/min
Tetryl	HPLC	U Bondpack C18 4mm x 30 cm	None	Isocratic	416 sec	60/40 methanol/H_2O	1 ml/min
DNP	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	12.5 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
RDX	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	13.5 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
TNB	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	17.2 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
2,4-DNT	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	24.3 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
TNT	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	25.6 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
Tetryl	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	26.7 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min
DPA	HPLC	Spherisorb ODS, 5µ, 250 x 4.6 mm	Pellicular LC-18, 40µ 50 x 4.6 mm	Initial: 30% CH_3CN Final: 50% CH_3CN Time: 35 min Gradient: linear	39.2 min	0.08M acetic acid adjusted to pH 3.1 with ammonium hydroxide/CH_3CN	1.0 ml/min

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Table I-2. Semiquantitative Certification Testing
Statistical Data Summary

Analyte	Detector	Attn.	Chart Speed	Inj. Volume	USATHAMA Method	Det. limit	Corr. Coeff.	Slope	Int.	MPR Reference
PETN	UV at 230 nm	0.01 AUFS	0.1 in/min	70 uL	none	1.77 ug/mL	0.996	1.046	0.450	9
2,6-DNT	UV at 230 nm	0.01 AUFS	0.1 in/min	70 uL	MRI Method	0.26 ug/mL	0.998	1.061	9.888	8
NG	UV at 230 nm	0.01 AUFS	0.1 in/min	70 uL	MRI Method	4.54 ug/mL	0.999	0.989	2119.5	8
2,4-DNT	ECD @300C	1×10^{-11} x8	0.5 cm/min	1 uL	246 TNT-WA-02	0.11 ug/mL	0.967	0.743	0.034	5
2,6-DNT	ECD @300C	1×10^{-11} x8	0.5 cm/min	1 uL	246 TNT-WA-02	0.09 ug/mL	0.989	1.069	-0.012	5
1,3,5-TNB	ECD @300C	1×10^{-11} x8	0.5 cm/min	1 uL	246 TNT-WA-02	0.12 ug/mL	0.999	1.058	0.007	5
2,4,6-TNT	ECD @300C	1×10^{-11} x8	0.5 cm/min	1 uL	246 TNT-WA-02	0.12 ug/mL	0.979	1.054	-0.009	5
DPA	UV at 254 nm	0.1 AUFS	0.5 cm/min	200 uL	DPA-WA-01	12.25 ug/mL	0.997	0.796	-0.634	3
Tetryl	UV at 254 nm	0.1 AUFS	0.5 cm/min	200 uL	TETRYL-WA-02	0.08 ug/mL	0.995	0.862	-0.004	5
DNP	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	30 ng/mL	0.998	0.971	5.397	10
RDX	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MIR Method	70 ng/mL	0.998	1.009	9.698	10
TNB	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	25 ng/mL	0.999	0.994	0.674	10
2,4-DNT	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	24 ng/mL	0.999	0.990	1.585	10
TNT	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	24 ng/mL	0.999	1.012	0.269	10
Tetryl	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	25 ng/mL	0.999	1.050	-5.410	10
DPA	UV at 254 nm	0.01 AUFS	0.1 in/min	100 uL	MRI Method	51 ng/mL	0.999	0.993	7.745	10

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Table I-3. DNP - Found Concentrations

```
ARMY CERTIFICATION
DNP
FOUND CONC
(1) 26 24 (2) 26 28

(3) 26 29 (4) 52 52

(5) 52 52 (6) 52 53

(7) 104 104 (8) 104 126

(9) 104 111 (10) 260 254

(11) 260 261 (12) 260 264

(13) 520 495 (14) 520 533

(15) 520 498
```

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Table I-4. DNP - Analysis of Target-Found Concentration
Points

ARMY CERTIFICATION
DNP
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 192.4   SD 189.231830605

FOUND CONC
MEAN= 192.266666667   SD= 184.077804461

NO. RUNS : TOTAL X-Y ALL RUNS 13 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 5.39678981661
SLOPE= 0.971257571986
  USE FOR ACCURACY
R= 0.998451979989
MEAN SQR DEV OF POINTS FROM REGRESSION= 112.898610738
ST ERROR EST= 10.6249993288
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P EVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 2
y(c)= 19.6057488586
x(d)= 29.1259198183

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Figure I-1. DNP - Graph of Target-Found Concentration Points

ARMY CERTIFICATION
DNP
FOUND CONC
533.00

VERTICAL AXIS TIC INTERVAL= 53.3

TARGET CONC

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Table I-5. RDX – Found Concentrations

```
ARMY CERTIFICATION
RDX
FOUND CONC
(1) 50 44   (2) 50 44
(3) 50 60   (4) 100 95
(5) 100 107  (6) 100 118
(7) 200 235  (8) 200 193
(9) 200 271  (10) 500 500
(11) 500 516  (12) 500 521
(13) 1000 1000  (14) 1000 1066
(15) 1000 984
```

Table I-6. RDX - Analysis of Target-Found Concentration
Points

ARMY CERTIFICATION
RDX
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 370 SD= 363.987366549

FOUND CONC
MEAN= 383.066666667 SD= 368.11963635

NO. RUNS 1, TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 9.69795037756
SLOPE= 1.00910463862
  USE FOR ACCURACY
R= 0.997557791953
MEAN SQR DEV OF POINTS FROM REGRESSION= 711.942079499
ST ERROR EST= 26.6822427749
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093178942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 2
y(c)= 45.3006848026
x(d)= 70.3255803599

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ARMY CERTIFICATION
RDX
FOUND CONC
1066.00

1066.00

0.00

y(c)

y(d)

0

TARGET CONC

200   400   600   800   1000

VERTICAL AXIS TIC INTERVAL= 106.6
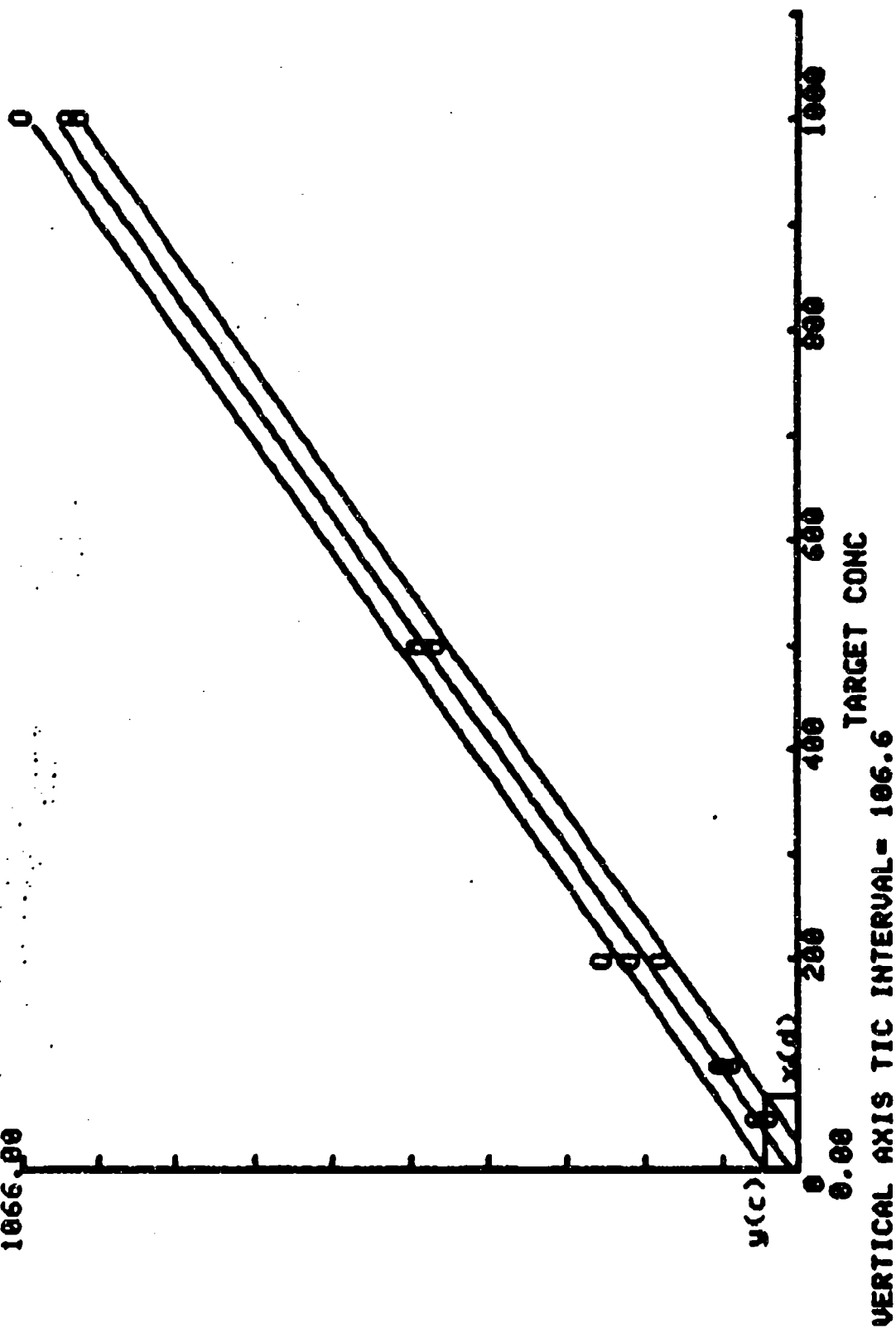
Figure I-2.   RDX - Graph of Target-Found Concentration Points

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Table I-7. TNB - Found Concentrations - HPLC Method

ARMY CERTIFICATION
TNB
FOUND CONC
(1) 25 25 (2) 25 26

(3) 25 28 (4) 50 49

(5) 50 50 (6) 50 52

(7) 100 96 (8) 100 99

(9) 100 104 (10) 250 243

(11) 250 253 (12) 250 258

(13) 500 486 (14) 500 518

(15) 500 491

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Table I-8. TNE - Analysis of Target-Found
Concentration Points - HPLC Method

ARMY CERTIFICATION
TNB
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 185 SD= 181.953683274

FOUND CONC
MEAN= 184.666666667 SD= 181.09889432

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.67448759439l
SLOPE= 0.994552319331
  USE FOR ACCURACY
R= 0.999246618194
MEAN SQR DEV OF POINTS FROM REGRESSION= 53.1983038461
ST ERROR EST= 7.2937166826
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77893178942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 2
y(c)= 10.4285310439
x(d)= 19.5511771834

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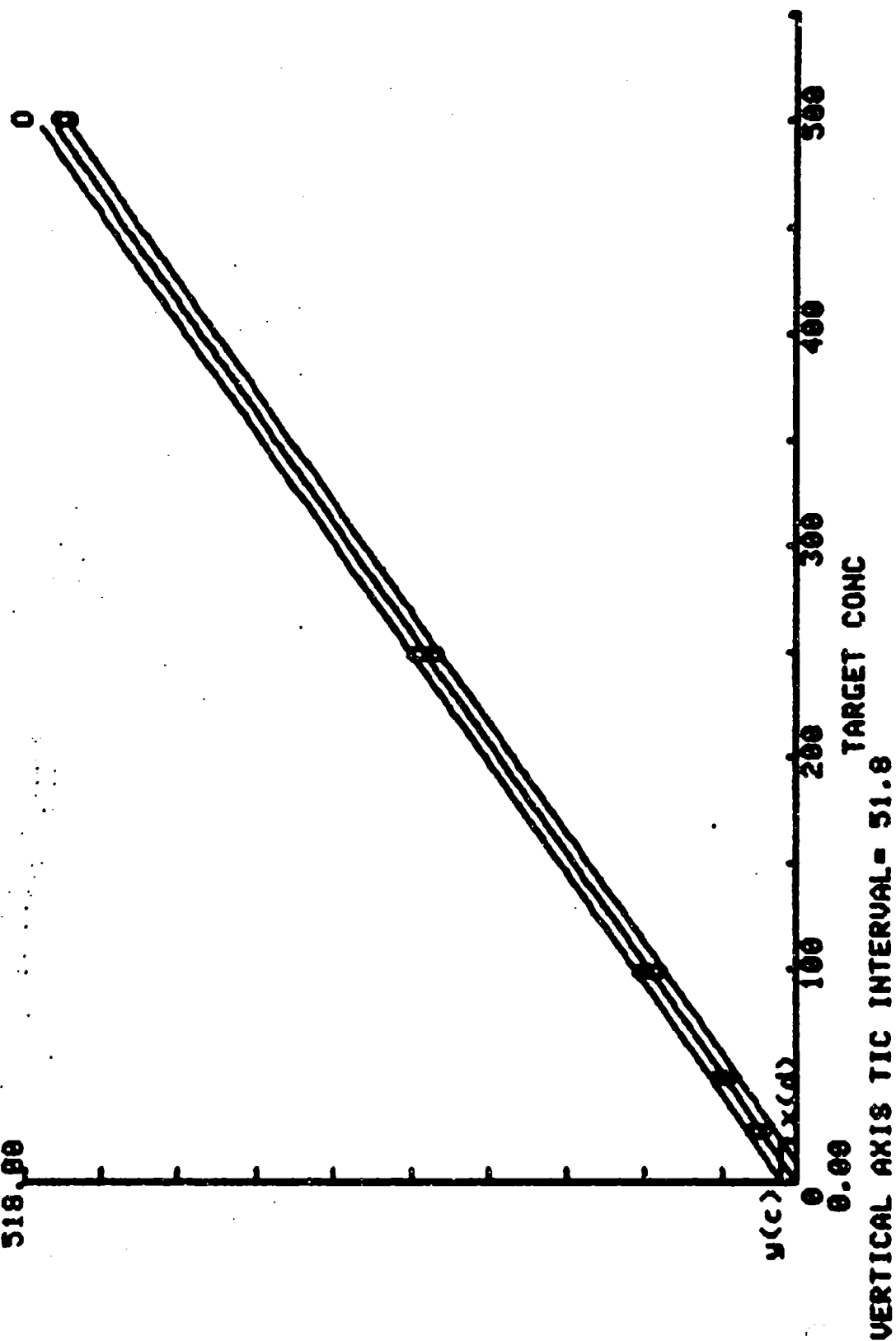
Figure 1-3. TNB – Graph of Target–Found Concentration Points – HPLC Method

ARMY CERTIFICATION
TNB
FOUND CONC

VERTICAL AXIS TIC INTERVAL= 51.8

TARGET CONC

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Table I-9. TNB-Found Concentrations - GC/ECD Method

ARMY CERTIFICATION GC/ECD METHOD
1,3,5 TNB
FOUND CONC
(1) 0.12 0.89 (2) 0.12 0.1

(3) 0.12 0.89 (4) 0.12 0.17

(5) 0.23 0.22 (6) 0.23 0.31

(7) 0.23 0.25 (8) 0.46 0.53

(9) 0.46 0.55 (10) 0.46 0.48

(11) 0.46 0.49 (12) 1.16 1.23

(13) 1.16 1.27 (14) 1.16 1.26

(15) 2.31 2.42 (16) 2.31 2.44

(17) 2.31 2.46 (13) 0 0

(19) 0 0 (20) 0 0

(21) 0 0

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Table I-10. TNB - Analysis of Target-Found Concentration Points - GC/ECD Method

```
ARMY CERTIFICATION GC/ECD METHOD
1,3,5 TNB
ANALYSIS OF 21 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 0.6350476196648   SD= 0.7915737779812

FOUND CONC
MEAN= 0.68380952381   SD= 0.83879363434874

NO. RUNS 1 TOTAL X-Y ALL RUNS 21 NO. CONCENTR 21
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.06789275388941
SLOPE= 1.05864575030
R= 0.39533243997
MEAN SQR DEV OF POINTS FROM REGRESSION (ST ERROR EST)= 3.88466528E-4
COMPUTE T
D.F.= 19
ENTER 2 TAIL P LEVEL (USUALLY .1, EACH CONFID BAND IS
.05 SO TOTAL P= .1)
.1
t= 1.729123474
REPLICATES ON UNKNOWN SAMPLE 3
Y(C)= 0.042052438934?
X(C))= 0.8657723484472
```

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ARMY CERTIFICATION GC/ECD METHOD
1,3,5 TNB
FOUND CONC

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 0.246
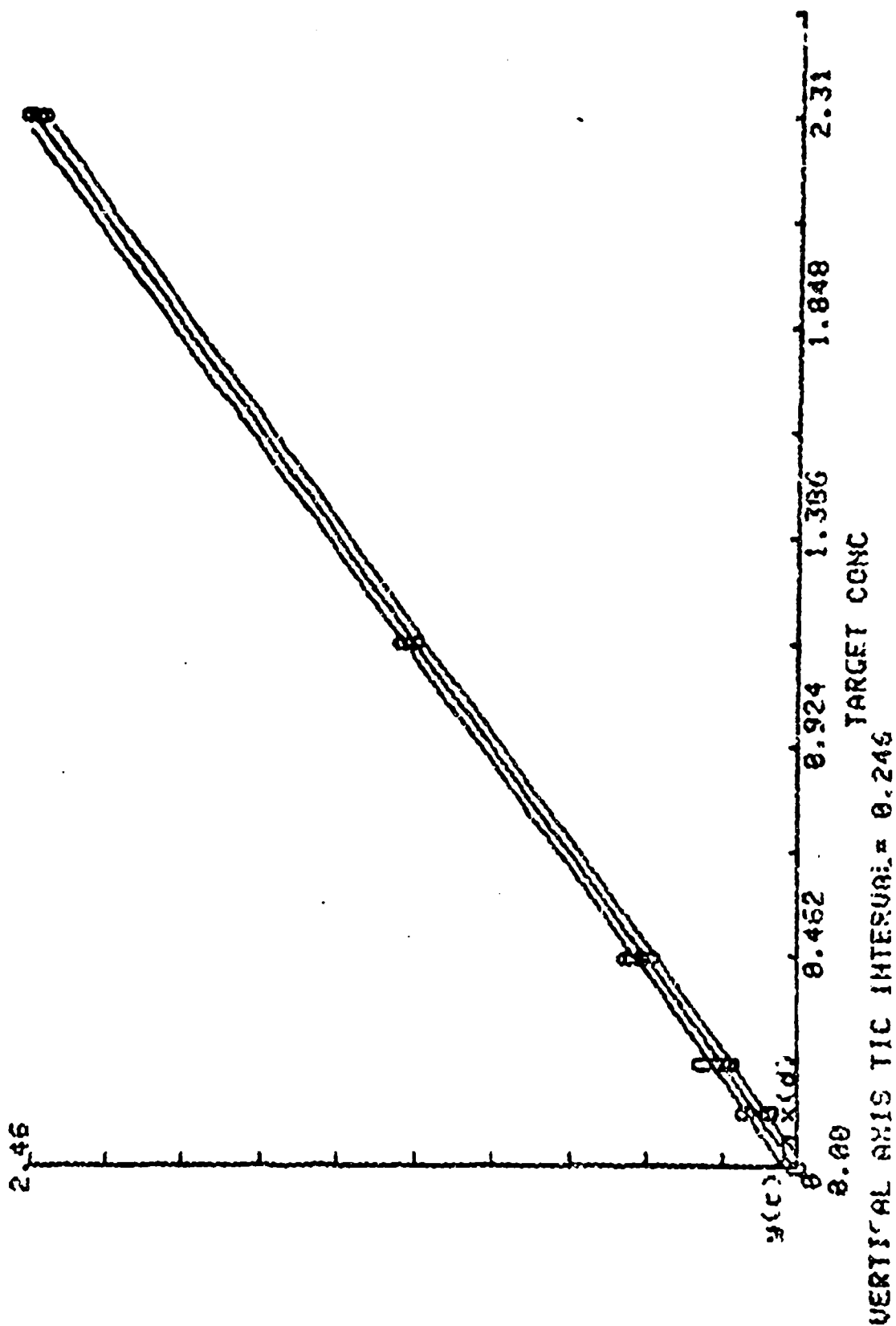
Figure I-4. TNB – Graph of Target-Found Concentration Points – GC/ECD Method

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Table I-11. 2,4-DNT – Found Concentrations – HPLC Method

ARMY CERTIFICATION
24DNT
FOUND CONC
(1) 24 26 (2) 24 26
(3) 24 27 (4) 48 50
(5) 48 48 (6) 48 50
(7) 96 91 (8) 96 94
(9) 96 100 (10) 240 238
(11) 240 241 (12) 240 240
(13) 480 471 (14) 480 492
(15) 480 468

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Table I-12.   2,4-DNT - Analysis of Target-Found
Concentration Points - HPLC Method

ARMY CERTIFICATION
24DNT
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 177.6   SD= 174.675535943

FOUND CONC
MEAN= 177.46666667   SD= 173.068882516

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 1.58495145631
SLOPE= 0.99832497303I
  USE FOR ACCURACY
R= 0.99951847442A
MEAN SQR DEV OF POINTS FROM REGRESSION= 31.057567837
ST ERROR EST= 5.5729317093S
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.7709317094Z
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 2
y(c)= 9.03775232583
x(d)= 15.8116768434

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Figure I-5. 2,4-DNT – Graph of Target-Found Concentration Points – HPLC Method

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Table I-13. 2,4-DNT-Found Concentrations – GC/ECD Method

ARMY CERTIFICATION GC/ECD METHOD
2,4 DNT
FOUND CONC
(1) 0.03 0.05 (2) 0.03 0.04

(3) 0.03 0.06 (4) 0.06 0.06

(5) 0.06 0.08 (6) 0.06 0.08

(7) 0.11 0.1 (8) 0.11 0.11

(9) 0.11 0.14 (10) 0.11 0.21

(11) 0.28 0.2 (12) 0.28 0.27

(13) 0.28 0.31 (14) 0.28 0.31

(15) 0.56 0.43 (16) 0.56 0.42

(17) 0.56 0.42 (18) 0.83 0.87

(19) 0 0 (20) 0 0

(21) 0 0.01 (22) 0 0

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ARMY CERTIFICATION   GC/ECD METHOD
2,4 DNT
ANALYSIS OF 22 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 0.168909090909   SD= 0.188677328259

FOUND CONC
MEAN= 0.153181818182   SD= 0.144992162798

NO. RUNS 1 TOTAL X-Y ALL RUNS 22 NO. CONCENTR 22
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.033608848431892
SLOPE= 0.743111112192
R= 0.967885515185
MEAN SQR DEV OF POINTS FROM REGRESSION (ST ERROR EST)= 0.0014326811139
COMPUTE T
D.F.= 20
ENTER 2 TAIL P LEVEL (USUALLY .1, EACH CONFID BAND IS
.05 SO TOTAL P= .1)
.1
t= 1.72471716621
REPLICATES ON UNKNOWN SAMPLE 3
y(c)= 0.07558218242279
x(d)= 0.110789286561

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ARMY CERTIFICATION GC/ECD METHOD
2,4 DNT
FOUND CGNC

8.43

y(c)

x(d)

8.88

8.112   8.224   8.336   8.448   8.56

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 8.843

Figure I-6. 2,4-DNT - Graph of Target-Found Concentration Points - GC/ECD Method

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Table I-15. TNT - Found Concentrations - HPLC Method

```
ARMY CERTIFICATION
TNT
FOUND CONC
(1) 24 25 (2) 24 26

(3) 24 26 (4) 48 48

(5) 48 49 (6) 48 58

(7) 96 89 (8) 96 98

(9) 96 102 (10) 244 242

(11) 244 248 (12) 244 258

(13) 488 498 (14) 488 507

(15) 488 487
```

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ARMY CERTIFICATION
TNT
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 188 SD= 177.958233814

FOUND CONC
MEAN= 182.466666667 SD= 188.195475869

NB. RUNS 1 TOTAL X-Y ALL RUNS 15 NB. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.269286848564
SLOPE= 1.01220766566
  USE FOR ACCURACY
R= 0.999595522942
MEAN SQR DEV OF POINTS FROM REGRESSION= 28.2819574468
ST ERROR EST= 5.31807836035
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 2
y(c)= 7.37898698858
x(d)= 14.8139688585

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ARMY CERTIFICATION
TNT
FOUND CONC

507.00

VERTICAL AXIS TIC INTERVAL= 50.7

TARGET CONC

0.00   97.6   195.2   292.8   390.4   488
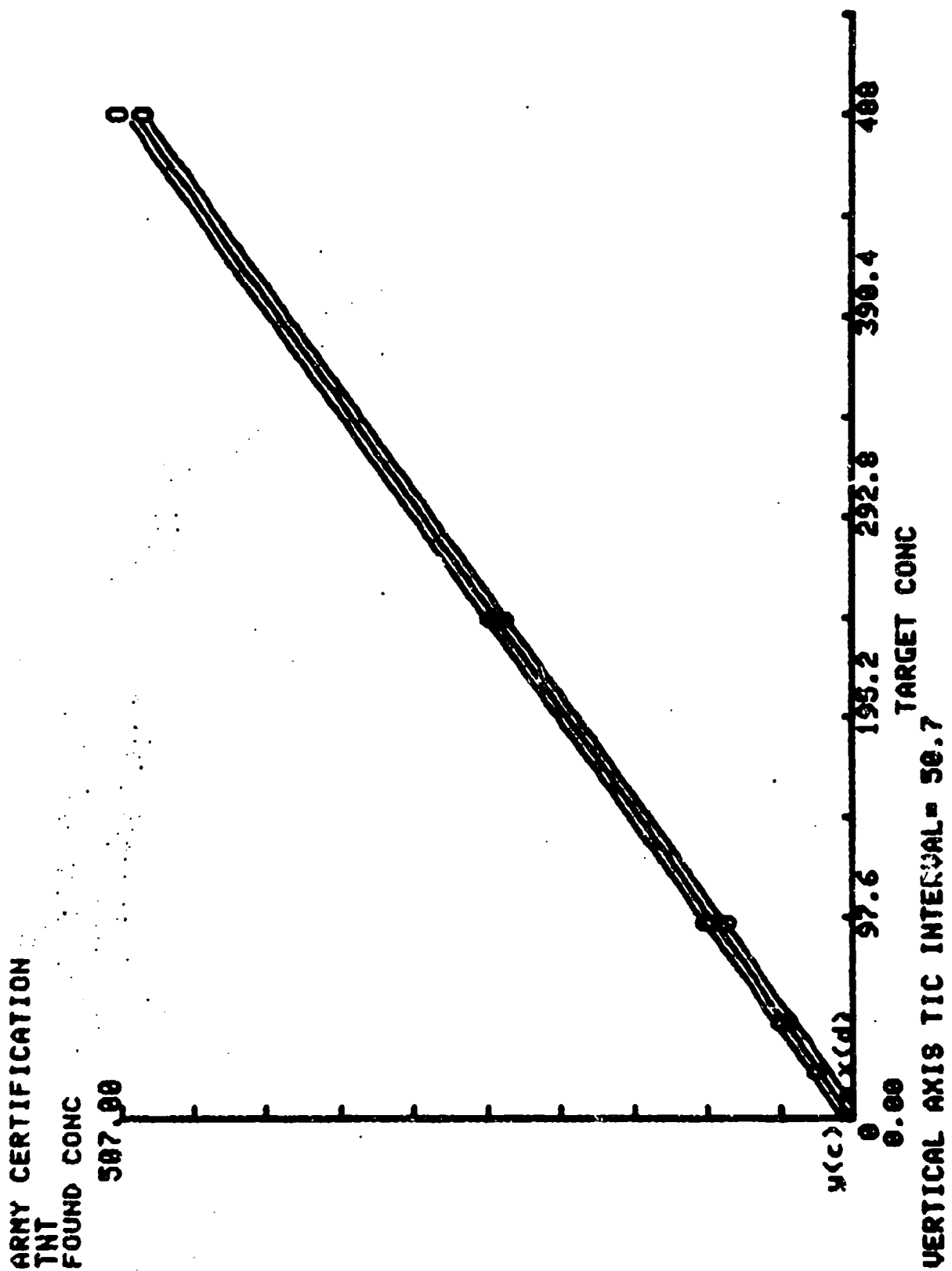
Figure I-7.   TNT - Graph of Target-Found Concentration
              Points - HPLC Method

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Table I-17. TNT - Found Concentrations - GC/ECD Method

ARMY CERTIFICATION GC/ECD METHOD:
2,4,6 TNT
FOUND CONC
(1) 0.04 0.02 (2) 0.04 0.03

(3) 0.04 0.1 (4) 0.04 0.00

(5) 0.08 0.12 (6) 0.08 0

(7) 0.08 0.06 (8) 0.08 0.15

(9) 0.15 0.11 (10) 0.15 0.14

(11) 0.15 0.08 (12) 0.15 0.08

(13) 0.37 0.51 (14) 0.37 0.32

(15) 0.37 0.34 (16) 0.37 0.34

(17) 0.75 0.92 (18) 0.75 0.77

(19) 0.75 0.73 (20) 0.75 0.74

(21) 0 0 (22) 0 0

(23) 0 0 (24) 0 0

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Table I-18. TNT - Analysis of Target Found Concentration
Points - GC/ECD Method

```
ARMY CERTIFICATION  GC/ECD METHOD
2,4,6 TNT
ANALYSIS OF 24 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 8.23166666667   SD= 8.266338566272

FOUND CONC
MEAN= 8.235   SD= 8.286728588121

NO. RUNS 1 TOTAL X-Y ALL RUNS 24 NO. CONCENTR 24
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -8.08911473265162
SLOPE= 1.053732685
R= 8.978826303535
MEAN SQR DEV OF POINTS FROM REGRESSION (ST ERROR EST)= 8.083681034986.74
COMPUTE T
D.F.= 22
ENTER 2 TAIL P LEVEL (USUALLY .1   ... ? CONFID BAND IS
.05 SO TOTAL P= .1)
.1
t= 1.71713909157
REPLICATES ON UNKNOWN SAMPLE 3
y(c)= 8.0566954873641
x(d)= 8.122913743297
```

ARMY CERTIFICATION   GC/ECD METHOD
2,4,6 TNT
FOUND CONC
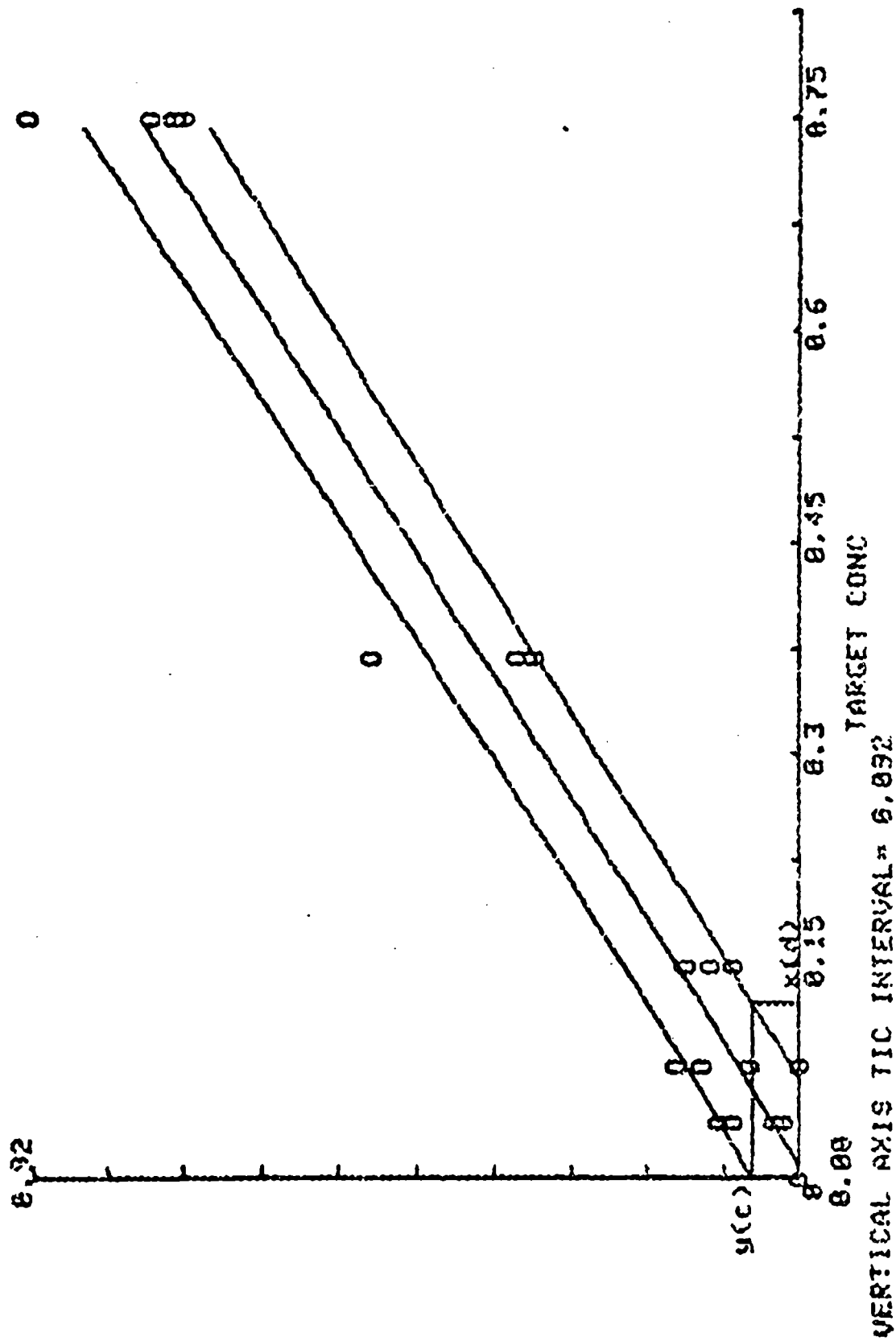
Figure I-8. Graph of Target-Found Concentration
Points - GC/ECD Method

Table I-19. Tetryl-Found Concentrations

```
ARMY CERTIFICATION
TETRYL
FOUND CONC
RUN 2
(14) 0 0 (15) 0 0

(16) 0 0 (17) 0 0

(18) 0.05 0.042 (19) 0.05 0.039

(20) 0.05 0.039 (21) 0.05 0.036

(22) 0.1 0.086 (23) 0.1 0.086

(24) 0.1 0.083 (25) 0.1 0.083

(26) 0.2 0.172 (27) 0.2 0.179

(28) 0.2 0.166 (29) 0.2 0.256

(30) 0.5 0.367 (31) 0.5 0.383

(32) 0.5 0.364 (33) 0.5 0.37

(34) 1 0.874 (35) 1 0.888

(36) 1 0.872 (37) 1 0.885
```

Table I-20. Tetryl - Analysis of Target-Found Concentration Points

ARMY CERTIFICATION
TETRYL
ANALYSIS OF 24 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 0.388333333333   SD= 0.356817657326

FOUND CONC
MEAN= 0.26125   SD= 0.309147108643

NO. RUNS 1 TOTAL X-Y ALL RUNS 24 NO. CONCENTR 24
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.00450455321571
SLOPE= 0.861986659878
R= 0.994812845818
MEAN SQR DEV OF POINTS FROM REGRESSION (ST ERROR EST)= 0.00193387217364
COMPUTE T
D.F.= 22
ENTER 2 TAIL P LEVEL (USUALLY .1, EACH CONFID BAND IS
.05 SO TOTAL P= .1)
.1
t= 1.71713989197
REPLICATES ON UNKNOWN SAMPLE 3
y(c)= 0.0387393706587
x(d)= 0.0818387514615

Figure I-9. Tetryl – Graph of Target-Found Concentration Points

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Table I-21. DPA - Found Concentrations

```
ARMY CERTIFICATION
DPA
FOUND CONC
(1) 5 4.31 (2) 5 4.3
(3) 10 7.5 (4) 10 7.6
(5) 20 15.93 (6) 20 16.96
(7) 50 35.01 (8) 50 35.1
(9) 100 79.74 (10) 100 81.62
```

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Table I-22. DPA- Analysis of Target-Found Concentration
Points

ARMY CERTIFICATION
DPA
ANALYSIS OF 10 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 37 SD= 37.0585123925

FOUND CONC
MEAN= 28.807 SD= 29.5748620923

NO. RUNS 1 TOTAL X-Y ALL RUNS 10 NO. CONCENTR 10
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.633624595469
SLOPE= 0.79569255634
  USE FOR ACCURACY
R= 0.99703533176
MEAN SQR DEV OF POINTS FROM REGRESSION= 5.82586021445
ST ERROR EST= 2.4136818793
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 8
TWO TAIL P LEVEL IS .1
t= 1.85954407943
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 1
y(c)= 4.3851937847
x(d)= 12.2547388662

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Figure I-10. DPA -- Graph of Target-Found Concentration
Points

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Table I-23. 2,6-DNT – Found Concentrations –
HPLC Method

ARMY CERTIFICATION
26DNT
FOUND CONC
(1) 0 0 (2) 0 0

(3) 258 338 (4) 258 302

(5) 515 460 (6) 515 512

(7) 1030 1246 (8) 1030 1222

(9) 2575 2660 (10) 2575 2560

(11) 5150 5760 (12) 5150 5280

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Table I-24. 2,6-DNT - Analysis of Target-Found
Concentration Points - HPLC Method

ARMY CERTIFICATION
26DNT
ANALYSIS OF 12 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 1588   SD= 1878.84635784

FOUND CONC
MEAN= 1695   SD= 1998.49698069

NO. RUNS 1 TOTAL X-Y ALL RUNS 12 NO. CONCENTR 12
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 9.88879232945
SLOPE= 1.86115313974
  USE FOR ACCURACY
R= 0.997621596909
MEAN SQR DEV OF POINTS FROM REGRESSION= 20873.6483813
ST ERROR EST= 144.477155223
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 10
TWO TAIL P LEVEL IS .1
t= 1.81245868646
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 290.49849589
x(d)= 524.784244692 NG/2ML

34
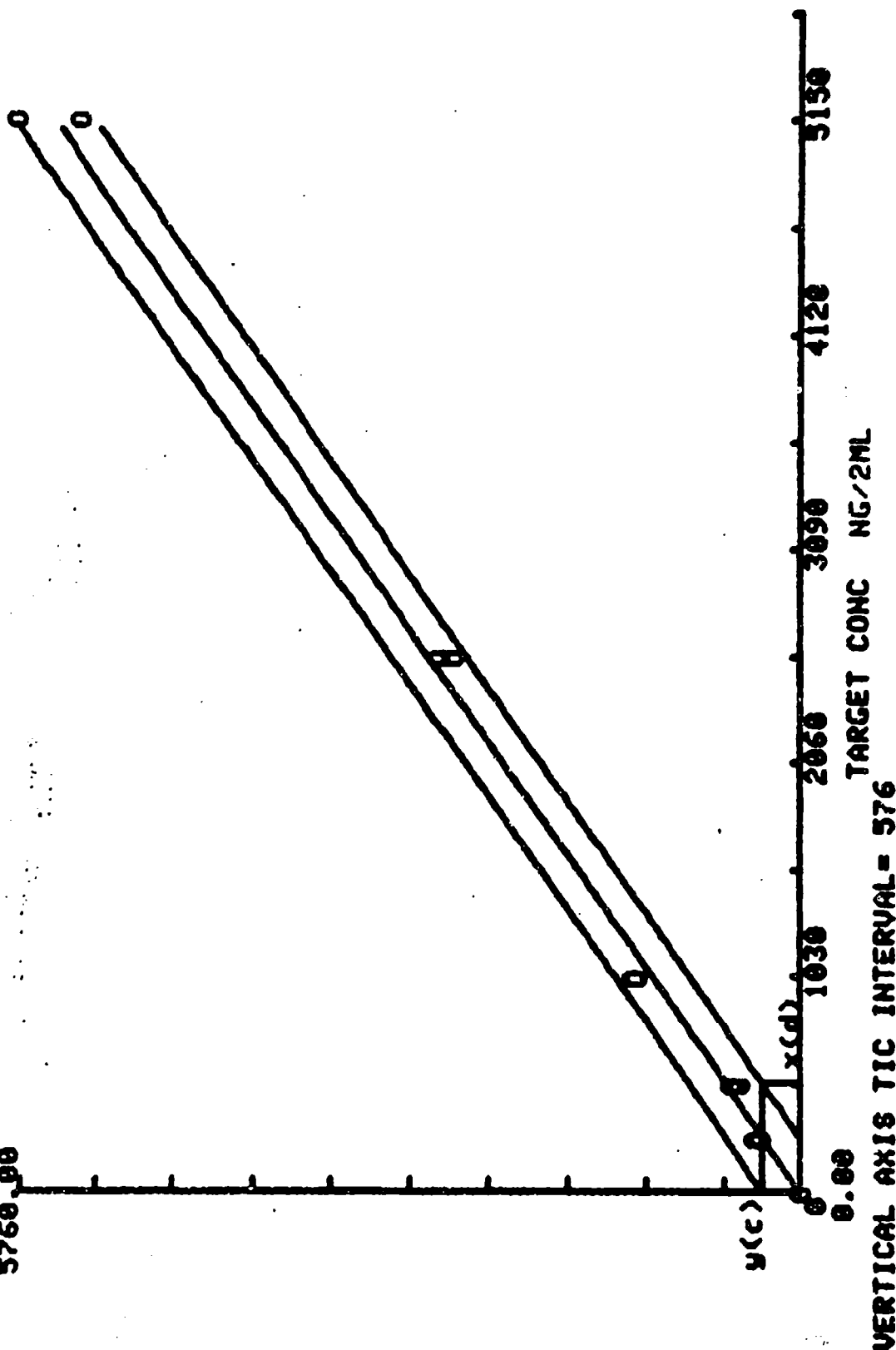
Figure I-11. 2,6-DNT – Graph of Target-Found
Concentration Points – HPLC Method

ARMY CERTIFICATION
26DNT
FOUND CONC

5768.88

8.88

y(c)

x(d)

TARGET CONC NG/2ML

1838   2888   3888   4128   5138

VERTICAL AXIS TIC INTERVAL= 576

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Table I-25. 2,6-DNT-Found Concentrations - GC/ECD Method

```
ARMY CERTIFICATION  GC/ECD METHOD
2,6 DNT
FOUND CONC
(1) 0.84 0.83 (2) 0.84 0.86

(3) 0.84 0 (4) 0.84 0

(5) 0.87 0.83 (6) 0.87 0.83

(7) 0.87 0.88 (8) 0.87 0.84

(9) 0.14 0.16 (10) 0.14 9.21

(11) 0.14 0.12 (12) 0.14 0.86

(13) 0.36 0.45 (14) 0.36 0.34

(15) 0.36 0.39 (16) 0.36 0.41

(17) 0.72 0.84 (18) 0.72 0.73

(19) 0.72 0.71 (20) 0.72 0.71

(21) 0 0 (22) 0 0

(23) 0 0 (24) 0 0
```

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Table I-26. 2,6-DNT - Analysis of Target-Found
Concentration Points

ARMY CERTIFICATION GC/ECD METHOD
2,6 DNT
ANALYSIS OF 24 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 0.22166666667   SD= 0.25683138424246

FOUND CONC
MEAN= 0.225   SD= 0.27756786984842

NO. RUNS 1 TOTAL X-Y ALL RUNS 24 NO. CONCENTR 24
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.01190009535528
SLOPE= 1.068726186625
R= 0.98888646951517
MEAN SQR DEV OF POINTS FROM REGRESSION (ST ERROR EST)= 0.88178834051461
COMPUTE T
D.F.= 22
ENTER 2 TAIL P LEVEL (USUALLY .1, EACH CONFID BAND IS
.05 SO TOTAL P= .1)
.1
t= 1.71713909197
REPLICATES ON UNKNOWN SAMPLE 3
y(c)= 0.83434362272298
x(d)= 0.80545745229481

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Figure I-12. 2,6-DNT – Graph of Target-Found
Concentration Points – GC/ECD Method

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Table I-27. NG-Found Concentrations

```
ARMY CERTIFICATION
NG
FOUND CONC
(1) 0 0 (2) 0 0
(3) 7680 10120 (4) 7680 10740
(5) 15360 13940 (6) 15360 17760
(7) 30720 37600 (8) 30720 34260
(9) 76800 78600 (10) 76800 78800
(11) 153600 153900 (12) 153600 152560
```

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Table I-28. NG – Analysis of Target-Found
Concentration Points

ARMY CERTIFICATION
NG
ANALYSIS OF 12 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 47360   SD= 56038.9682599

FOUND CONC
MEAN= 49043.3333333   SD= 55472.3674591

NO. RUNS 1 TOTAL X-Y ALL RUNS 12 NO. CONCENTR 12
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 2199.55036995
SLOPE= 0.98910081147031
    USE FOR ACCURACY
R= 0.9992029923622
MEAN SQR DEV OF POINTS FROM REGRESSION= 5393900.17082
ST ERROR EST= 2322.4771626
    USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 10
TWO TAIL P LEVEL IS .1
t= 1.81245868646
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 6710.21417725
x(d)= 9875.83941875 NG/2ML

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Figure I-13. NG - Graph of Target-Found Concentration Points

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Table I-29. PETN-Found Concentrations

ARMY CERTIFICATION
PETN
FOUND CONC.
(1) 1.2 1.5 (2) 1.2 1.06

(3) 1.2 1.73 (4) 1.2 2.32

(5) 2.4 2.59 (6) 2.4 2.87

(7) 2.4 3.52 (8) 2.4 3.42

(9) 4.8 5.24 (10) 4.8 5.42

(11) 4.8 5.98 (12) 4.8 7.07

(13) 12 12.22 (14) 12 11.6

(15) 12 13.2 (16) 12 12.56

(17) 24 25.03 (18) 24 24.19

(19) 24 26.41 (20) 24 27.34

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Table I-30. PETN - Analysis of Target-Found
Concentration Points

```
ARMY CERTIFICATION
PETN
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 8.88   SD= 8.6568572188

FOUND CONC
MEAN= 9.7235  SD= 9.8938327724

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.4377872216828
SLOPE= 1.8456883764B
USE FOR ACCURACY
R= 0.9952586421
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.77936800654
ST ERROR EST= 8.88281824B596
USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.734B6096488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U U
REPLICATES= 3
y(c)= 1.3670336192l
x(d)= 1.7692682716Z
```

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Figure I-14. PETN – Graph of Target-Found Concentration Points

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TABLE II-1

QUANTITATIVE CERTIFICATION TESTING
STATISTICAL DATA SUMMARY

	Metal		Concrete		Brick		Transite	
	D.L. $\mu g/cm^2$	% Rec	D.L. $\mu g/cm^2$	% Rec	D.L. $\mu g/cm^2$	% Rec	D.L. $\mu g/cm^2$	% Rec
DNP	0.33	96%	1.74 (0.35	31% 34%)[2]	1.59	55%	2.22 (1.15	34% 30%)[2]
RDX	0.25	96%	0.63	78%	2.11	72%	3.48 (0.80	67% 82%)[2]
TNB	0.28	95%	0.98	75%	2.12	74%	3.46 (0.76	59% 71%)[2]
2,4-DNT	0.90	84%	1.08	78%	2.10	69%	3.52 (0.62	65% 79%)[2]
2,4,6-TNT	0.60	97%	1.57	74%	1.68	66%	3.18 (0.68	51% 60%)[2]
Tetryl	1.95	88%	4.29	51%	2.60	68%	4.13	56%
DPA	0.50	94%	2.44 (1.15	74% 84%)[2]	2.14	69%	3.71 (0.90	67% 82%)[2]
2,6-DNT	2.85	94%	6.46	86%	6.36	49%	2.04	79%
NG	9.36	94%	21.7	76%	32.5	44%	26.1	72%
PETN	10.2	86%	5.39	83%	20.6	62%	10.0	82%

---

[1] Calculated from four days of target vs. found concentrations using the procedures specified in the 1980 USATHAMA QA Plan.

[2] Calculated from three days of target vs. found concentrations.

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QUANTITATIVE METHOD FOR THE DETERMINATION OF DNP,
RDX, TNB, 2,4-DNT, TNT ETRYL, AND DPA ON SURFACES

1. Application

Method used to extract the following compounds from metal, brick, concrete,
transite surfaces:

> 2,4,-dinitrophenol DNP
> cyclotrimethylenetrinitramine RDX
> 1,3,5-trinitrobenzene TNB
> 2,4-dinitrotoluene 2,4-DNT
> 2,4,6-trinitrotoluene 2,4,6-TNT
> 2,4,6-trinitrophenylmethylnitramine Tetryl
> diphenylamine DPA

A. Tested Concentration Range

DNP	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
RDX	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
TNB	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
2,4-DNT	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
TNT	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
Tetryl	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$
DPA	$0.25\ \mu g/cm^2$	$-\ 5.00\ \mu g/cm^2$

B. Sensitivity

Instrument response for each analyte is given below:

Analyte	Concentration	Response
DNP	25.04 ng/mL	3700 area units
RDX	24.86 ng/mL	1388 area units
TNB	24.97 ng/mL	4437 area units
2,4-DNT	24.99 ng/mL	6090 area units
TNT	24.91 ng/mL	4104 area units
Tetryl	25.30 ng/mL	2895 area units
DPA	24.91 ng/mL	2101 area units

C. Detection Limit

See Table II-1.

D. Interferences

Interferences present in some brick and transite samples were apparently
random rather than systematic. For example, the HPLC analysis of
extraction B of one blank (unspiked) brick surface (extracted Feb 9)

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indicated the presence of a compound with a retention time of 1510 seconds. This compound interfered with the TNT. However, this interference was not observed in any other blank brick sample. Therefore, only the brick samples analyzed on Feb 9 were corrected for the interference.

E. Analysis Rate

Six samples can be extracted and prepared for analysis in three hours. Rate of analysis is given below, excluding calibration standards:

DNP	8 samples in an 8 hour day
RDX	8 samples in an 8 hour day
TNB	8 samples in an 8 hour day
2,4-DNT	8 samples in an 8 hour day
TNT	8 samples in an 8 hour day
Tetryl	8 samples in an 8 hour day
DPA	8 samples in an 8 hour day

2. Chemistry

2,4,-dinitrophenol $C6H4N2O5$
CAS RN 51-28-5
MP 112-114C

Cyclotrimethylenetrinitramine $C3H6N6O6$
CAS RN 121-82-4
MP 205-206C

1,3,5-trinitrobenzene $C6H3N3O6$
CAS RN 99-35-4
MP 122.5C

2,4-dinitrotoluene $C7H6N2O4$
CAS RN 121-14-2
MP 71C

2,4,6-trinitrotoluene $C7H5N3O6$
CAS RN 118-96-7
MP 80.1C

2,4,6-trinitrophenylmethylnitramine
CAS RN 479-45-8
MP 130C Explodes 187C

diphenylamine $C12H11N$
CAS RN 122-39-4
MP 53-54C BP 302C

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3. Apparatus

A. Instrumentation

Waters Associates Model 6000A Solvent Delivery System
Waters Associates Model M-45 Solvent Delivery System
Waters Associates Model 660 Solvent Programmer
Waters Associates Model 440 Absorbance Detector
Waters Associates Intelligent Sample Processor (WISP)
Spectra-Physics Minigrator
Hewlett Packard 7133A Recorder

B. Parameters

Column: Spherisorb ODS 5µ, 250 x 4.6 mm ID
Precolumn: Pellicular LC-18, 40µ, 50 x 4.6 mm ID
Solvent System: linear gradient
    Initial: 30/70 CH_3CN/0.08 M acetic acid adjusted
           to pH 3.1 with NH_4OH
    Final: 50/50 CH_3CN/0.08 M acetic acid adjusted
           to pH 3.1 with NH_4OH
    Time: 35 minutes
Detector: UV at 254 nm
Flow Rate: 1.0 mL/min
Attenuation: 0.01 AUFS
Injection Volume: 100 µL

C. Hardware/Glassware

Westinghouse Ultrasonic cleaner
8 ounce jars with teflon lined caps
25 mL graduated cylinders
microliter syringes
volumetric flasks - 50, 10, 5 mL
vials - WISP and 14 mL, with teflon lined caps

D. Chemicals

acetonitrile, HPLC grade
nitrogen
acetic acid
ammonium hydroxide
Standard Analytical Reference Material for each analyte

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4. Standards

A. Calibration Standard

Stock Solution A: DNP, RDX, TNB, 2,4-DNT, TNT, TETRYL, DPA
Prepare individual stock solutions of 5.0 mg/mL. Combine
500 µL individual stocks and dilute to 5 mL.

Stock Solution B:
Dilute 625 µL Stock Solution A to 5 mL. Concentration is 62.5
ug/mL of each analyte

Calibration standards prepared in 25 mL volumetrics adding H_2O
so final solution is 55% H_2O/45% CH_3CN:

Cal Std.	µL Stock B Added	Concentration Each Analyte
1	10	25.0 ugL
2	20	50.0 ugL
3	40	100.0 ugL
4	80	200.0 ugL
5	200	500.0 ugL
6	400	1000.0 ugL

B. Control Spikes

Spiking stock solutions were prepared using 0.5 mg/mL stock solution.

µL Stock Soln/x mL CH_3CN	Concentration Each Analyte
125 µL/10 mL	6.2 mgL
250 µL/10 mL	12.0 mgL
500 µL/10 mL	25.0 mgL
500 µL/5 mL	50.0 mgL
625 µL/5 mL	62.5 mgL
1250 µL/5 mL	125.0 mgL
2500 µL/5 mL	250.0 mgL

400 µL 6.2, 12.5, 25.0, 62.5, 125.0 mgL Stocks spiked onto 10 cm^2
concrete and metal surfaces.

200 uL 12.5, 25.0, 50.0, 125.0, 250.0 mgL stocks spiked onto 10 cm^2
brick and transite surfaces.

Concentration of analytes on surface after spiking: 2.5 µg, 5.0 ug,
10.0 ug, 25.0 ug, 50 ug.

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5. Procedure

Extraction A

1. Spike 10 cm^2 surface sample with acetonitrile spike solution
   (volume dependent on surface type). Allow solvent to evaporate.

2. Transfer sample to 8 ounce jar and add 20 mL CH$_3$CN. Cover jar
   with teflon lined cap.

3. Sonicate for 10 minutes.

4. Transfer extract A to 50 mL volumetric flask, add 27 mL 0.08 M
   acetic acid and bring to volume with CH$_3$CN. Save surface
   sample for extraction B.

Extract A ready for analysis.

Extraction B

1. Add 20 mL CH$_3$CN to jar with surface sample. Sonicate for 10 minutes.

2. Transfer surface sample to a second jar. Add 20 mL CH$_3$CN and
   sonicate for 10 minutes more.

3. Combine extracts from steps 1 and 2 and evaporate using nitrogen
   to less than 5 mL.

4. Transfer evaporated extract to 10 mL volumetric flask. Add 5.5
   mL to 0.08 M acetic acid and bring to volume with CH$_3$CN.

Extract B ready for analysis.

6. Calculations

Calculate found concentration for each analyte in each sample extract
from daily calibration data.

Multiply found concentration by extract volume to find total µg in extract.
Combine total µg in extracts A and B to find total µg on surface.

7. References

Lakings, D.B., Baker, R.J., and Crook, M.V., "Precision and Accuracy
Assessment of the High Performance Liquid Chromatographic Analytical
Technique for the Determination of Dinitrophenol (DNP); Cyclotrimethylene
trinitramine (RDX); 1,3-Dinitrobenzene (DNB); 1,3,5-Trinitrobenzene (TNB);
2,4-Dinitrotoluene (2,4-DNT); Trinitrotoluene (TNT); 2,4,6-Trinitrophenyl-
methylnitramine (Tetryl); and Diphenylamine (DPA)", Midwest Research
Institute Technical Report No. 1, USATHAMA Contract No. DAAK11-81-C-0007,
March, 1981.

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QUANTITATIVE METHOD FOR THE DETERMINATION OF
2,6-DNT AND NG ON SURFACES

1. Application

Method used to extract the following compounds from metal, brick, concrete, transite surfaces:

> 2,6-dinitrotoluene   2,6-DNT
>
> nitroglycerine   NG

A. Tested Concentration Range

2,6-DNT	$1.00\ \mu g/cm^2$ to $20.00\ \mu g/cm^2$
NG	$12.50\ \mu g/cm^2$ to $125.00\ \mu g/cm^2$

B. Sensitivity

Instrument response for each analyte is given below:

Analyte	Concentration	Response
2,6-DNT	$0.10\ \mu g/mL$	208750 area units
NG	$1.25\ \mu g/mL$	186010 area units

C. Detection Limit

See Table II-1.

D. Interferences

No interferences were observed

E. Analysis Rate

Six samples can be extracted and prepared for analysis in three hours. Rate of analysis is given below excluding calibration standards:

2,6-DNT	16 Samples in an 8 hour day
NG	16 samples in an 8 hour day

2. Chemistry

2,6-dinitrotoluene $C_7H_6N_2O_4$
CAS RN 606-20-2
MP 66C

Nitroglycerine $C_3H_5N_3O_9$
CAS RN 55-63-0
MP Stable form 13.5C

3. Apparatus

A. Instrumentation

Beckman Model 110A Solvent Metering Pump
Waters Associates Model 450 Variable Wavelength Detector
Waters Associates Model U6K Injector
Hewlett Packard 3390A Integrator/Recorder

B. Parameters

Column: Spherisorb ODS, 5 ·, 250 x 4.6 mm ID
Precolumn: Pellicular LC-18, 40 μ, 50 x 4.6 mm ID
Solvent System: 35/65 CH_3CN/0.005 m t-butyl ammonium hydroxide,
    pH 6.5. adjusted with 1N H_3PO_4
Detector: UV at 230 nm
Flow Rate: 1.0 mL/min
Attenuation: 0.01 AUFS
Injection Volume: 100 μL

C. Hardware/Glassware

Westinghouse Ultrasonic cleaner
8 ounce jars with teflon lined caps
25 mL graduated cylinders
microliter syringes
volumetric flasks - 50, 10, 5 mL
vials - WISP and 14 mL, with teflon lined caps

D. Chemicals

Acetonitrile, HPLC grade
nitrogen
phosphoric acid
t-butyl ammonium hydroxide

Standard Analytical Reference Material for each analyte.

4. Standards

A. Calibration Standards

Prepare individual stock solutions:
    5 mg/mL 2,6-DNT
    50 mg/mL NG

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Stock Solution A:
Combine 200 µL 2,6-DNT stock and 250 µL NG stock and dilute to
10 mL CH₃CN. Concentration is 0.1 mg/mL 2,6-DNT and 1.25 mg/mL
NG.

Calibration standards prepared in 10 mL volumetric flasks
adding 50% H₂0/50% CH₃CN.

Cal Std.	µL Stock A added	2,6-DNT	NG
1	10	0.1 µg/mL	1.2 µg/mL
2	20	0.2 µg/mL	2.5 µg/mL
3	40	0.4 µg/ml	5.0 µg/mL
4	80	0.8 µg/mL	10.0 µg/mL
5	200	2.0 µg/mL	25.0 µg/mL

B. Control Spikes

Spike Solutions prepared following chart below:

Spike Solution	Amount Stock	Dilute with CH₃CN to	Concentration
1	1 mL of 5 mg/mL 2,6-DNT	5 mL	1 mg/mL 2,6-DNT
2	0.5 mL of 5 mg/mL 2,6-DNT	5 mL	0.5 mg/mL 2,6-DNT
3	0.5 mL of 5 mg/mL 2,6-DNT 0.625 mL of 50 mg/mL NG	5 mL	0.5 mg/mL 2,6-DNT 6.25 mg/ml NG
4	0.250 mL of 5 mg/mL 2,6-DNT 0.312 mL of 50 mg/mL NG	5 mL	0.25 mg/mL 2,6-DNT 3.12 mg/mL NG
5	0.200 mL of 5 mg/mL 2,6-DNT 0.250 mL of 50 mg/mL NG	5 mL	0.20 mg/mL 2,6-DNT 2.50 mg/mL NG
6	0.200 mL of 5 mg/mL 2,6-DNT 0.250 mL of 50 mg/mL NG	10 mL	0.10 mg/ml 2,6-DNT 1.25 mg/mL NG
7	0.100 mL of 5 mg/mL 2,6-DNT 0.125 mL of 50 mg/mL NG	10 mL	0.05 mg/ml 2,6-DNT 0.62 mg/mL NG
8	0.025 mL of 5 mg/mL 2,6-DNT 0.031 mL of 50 mg/mL NG	5 mL	0.025 mg/mL 2,6-DNT 0.31 mg/mL NG

400 µL of spike solutions 8, 7, 6, 4, 2 spiked onto 10 cm² concrete
and metal surfaces

200 µL of spike solutions 7, 6, 5, 3, 1 spiked onto 10 cm² brick
and transite surfaces

Concentration on surface after spiking:
NG - 125 µg, 250 µg, 500 µg, 1250 µg

2,6-DNT - 10 µg, 20 µg, 40 µg, 100 µg, 200 µg.

5.   Procedure

Extraction A

1. Spike 10 cm^2 surface sample with acetonitrile spike solution (volume dependent on surface type). Allow solvent to evaporate.

2. Transfer sample to 8 ounce jar and add 20 mL CH_3CN. Cover jar with teflon lined cap.

3. Sonicate for 10 minutes.

4. Transfer extract A to 50 mL volumetric flask, add 25 mL H_2O and bring to volume with CH_3CN.

    Save surface sample for Extraction B.

Extraction B

1. Add 20 mL CH_3CN to jar with surface sample. Sonicate for 10 minutes.

2. Transfer surface sample to a second jar. Add 20 mL CH_3CN and sonicate for 10 minutes more.

3. Combine extracts from steps 1 and 2 and evaporate using nitrogen to less than 5 mL .

4. Transfer evaporated extract to 10 mL volumetric flask. Add 5.0 mL H_2O and bring to volume with CH_3CN. Extract B ready for analysis.

6.   Calculations

Calculate found concentration for each analyte in each sample extract from daily calibration data.

Multiply found concentration by extract volume to find total µg in extract. Combine total µg in extracts A and B to find total µg on surface.

7.   References

Lakings, D.B., Baker, R.J., and Crook, M.V., "Precision and Accuracy Assessment of the High Performance Liquid Chromatographic Analytical Technique for the Determination of Nitrobenzene (NB), 2,6-Dinitrotoluene (2,6-DNT), Nitroglycerin (NG), and Picric Acid (PA), Midwest Research Institute Technical Report No. 2, USATHAMA Contract No. DAAK11-81-C-0007, May, 1981.

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QUANTITATIVE METHOD FOR THE DETERMINATION
OF PETN ON SURFACES

1. Application

Method used to extract pentaerythrite tetranitrate (PETN) from metal, brick, concrete, transite surfaces.

A. Tested Concentration Range:

PETN $5.0\ \mu g/cm^2$ to $100.0\ \mu g/cm^2$

B. Sensitivity

Instrument response for PETN is given below:

Concentration	Response
0.50 µg/mL	98025 area units

C. Detection Limit

See Table II-1.

D. Interferences

There were no interferences.

E. Analysis Rate

Six samples can be extracted and prepared for analysis in three hours. Rate of analysis is given below, excluding calibration standards:

PETN   32 samples in an 8 hour day

2. Chemistry

Pentaerythrite tetranitrate C5H8N4O12
CAS RN 78-11-5
MP 140-141 C

3. Apparatus

A. Instrumentation

Beckman Model 110A Solvent Metering Pump
Waters Associates Model 450 Variable Wavelength Detector
Waters Associates Model U6K Injector
Hewlett Packard 3390A Integrator/Recorder

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B. Parameters

Column: Spherisorb ODS, 5μ, 250 x 4.6 mm ID
Precolumn: Pellicular LC-18, 40μ, 50 x 4.6 mm ID
Solvent System: 65% CH_3CN/35% H_2O
Detector: UV at 230 nm
Flow Rate: 1.0 mL/min
Attenuation: 0.01 AUFS
Injection Volume: 100 μL

C. Hardware/Glassware

Westinghouse Ultrasonic cleaner
8 ounce jars with teflon lined caps
25 mL graduated cylinders
microliter syringes
volumetric flasks - 50, 10, 5 mL
vials - WISP and 14 mL, with teflon lined caps

D. Chemicals

Acetonitrile, HPLC grade
Standard Analytical Reference Material for PETN

4. Standards

A. Calibration Standards:

Prepare stock solution as follows:
200 μL of SARM (50 mg/mL) in 10 mL CH_3CN = 1.0 mg/mL

Calibration Standards prepared in 10 mL volumetric flasks adding
50% H_2O/50% CH_3CN.

Cal. Std	μl Stock added	Concentration PETN
1	5	0.5 μg/mL
2	10	1.0 μg/mL
3	20	2.0 μg/mL
4	40	4.0 μg/mL
5	100	10.0 μg/mL
6	200	20.0 μg/mL

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B. Control Spikes

Spike solutions prepared following chart below:

Spike Solution	Amount Stock	Dilute with CH₃CN to	Concentration
1	12.5 µL of 50 mg/mL	5 mL	0.125 mg/mL
2	50 µL of 50 mg/mL	10 mL	0.25 mg/mL
3	100 µL of 50 mg/mL	10 mL	0.50 mg/mL
4	100 µL of 50 mg/mL	5 mL	1.0 mg/mL
5	125 µL of 50 mg/mL	5 mL	1.25 mg/mL
6	500 µL of 50 mg/mL	10 mL	2.5 mg/mL
7	500 µL of 50 mg/mL	5 mL	5.0 mg/mL

400 µL spike solutions 1,2,3,5 and 6 spiked onto 10 cm^2 metal surfaces

200 µL spike solutions 2,3,4,6,7 spiked onto 10 cm^2 concrete, transite, and brick surfaces.

Concentration of analytes on surface after spiking: 50 µg, 100 µg, 200 µg, 500 µg, 1000 µg.

5. Procedure

1. Spike 10 cm^2 surface sample with acetonitrile spike solution (volume dependent on surface type). Allow solvent to evaporate.

2. Transfer sample to 8 ounce jar.

3. Add 12 mL CH₃CN. Cover jar with teflon lined cap. Sonicate for 10 min.

4. Transfer extract to 50 mL volumetric flask.

5. Repeat steps 3 and 4 twice, adding extracts to same 50 mL volumetric flask.

6. Rinse jar with 17 mL H_2O and transfer to volumetric flask.

7. Bring to volume with CH₃CN.

8. Ready for HPLC analysis.

6. Calculations

Calculate found concentration for each analyte in each sample extract from daily calibration data.

Multiply found concentration by extract volume to find total µg in extract.

7. References

None

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Table II-2. DNP on Metal - Target US. Found Concentrations

2,4-DINITROPHENOL (24DNP)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.920 2.270 2.260 2.470
5.000	3.700 4.030 4.610 5.100
10.000	9.060 8.020 10.040 11.220
25.000	23.500 22.460 25.240 24.610
50.000	46.870 47.850 48.840 48.220

2,4-DINITROPHENOL   (24DNP)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 17.6145   SD= 17.4133452982

H0. RUNS 1 TOTAL X-Y ALL RUNS 20 N0. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT=-0.226280339806
SLOPE= 0.964366504854
  USE FOR ACCURACY
R= 0.998797261237
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.769459159271
ST ERROR EST= 0.877188212
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 1.37295729236
x(d)= 3.38309425069
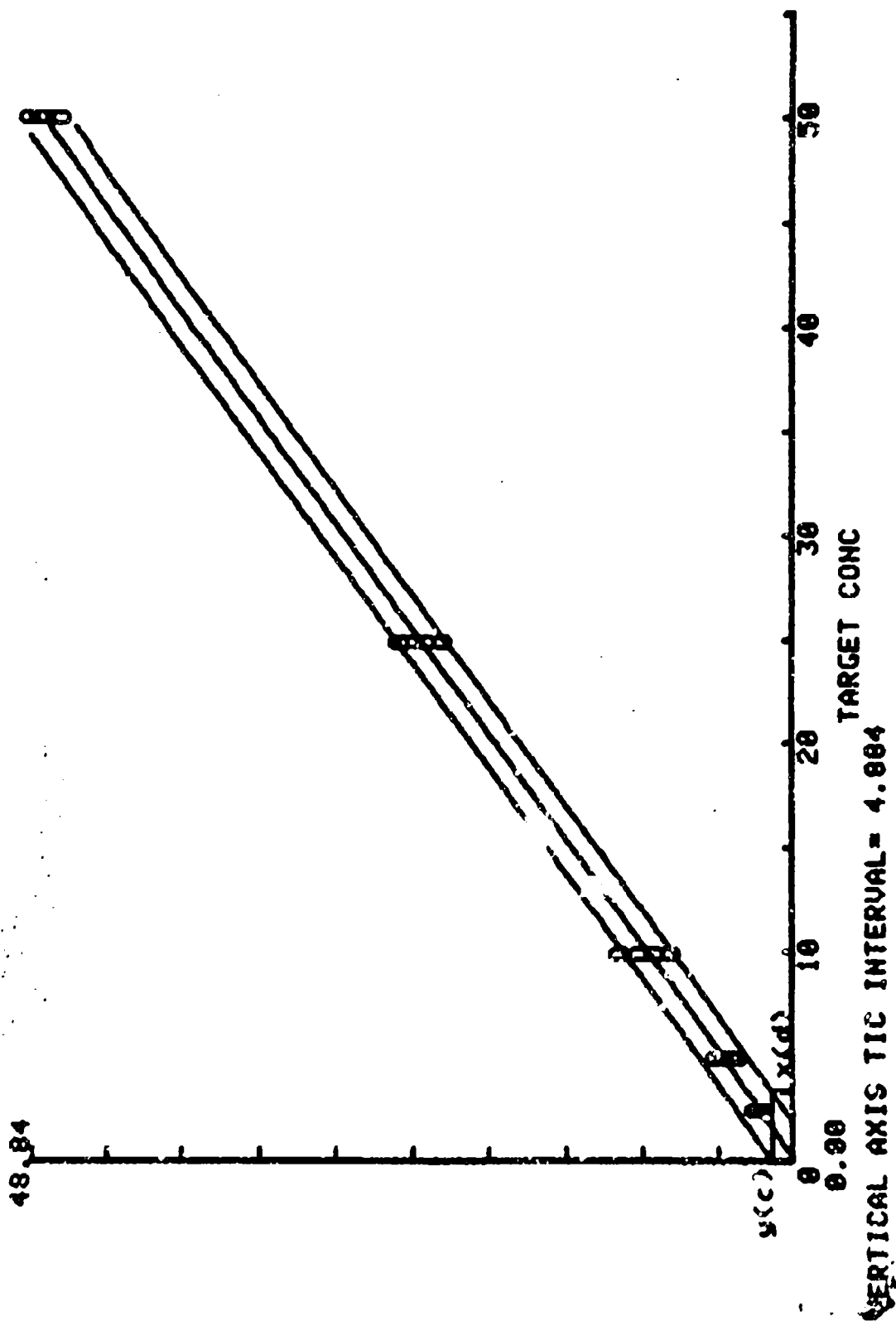
Figure II-1. DNP on Metal – Graph of Target-Found Concentration Points

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Table II-4. DNP on Metal - Inaccuracy and Imprecision Data

2,4-DINITROPHENOL (24DNP)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/1· sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.230	0.228	-10.800	10.232
5.000	4.360	0.620	-12.800	14.229
10.000	9.585	1.367	-4.150	14.261
25.000	23.953	1.228	-4.190	5.126
50.000	47.945	0.825	-4.110	1.720
Means		0.854	-7.210	9.114

2,4-DINITROPHENOL (24DNP)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 0.869

TARGET CONC

Figure II-2. DNP on Metal - Graph of Inaccuracy

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2,4-DINITROPHENOL (24DNP)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.4268374214
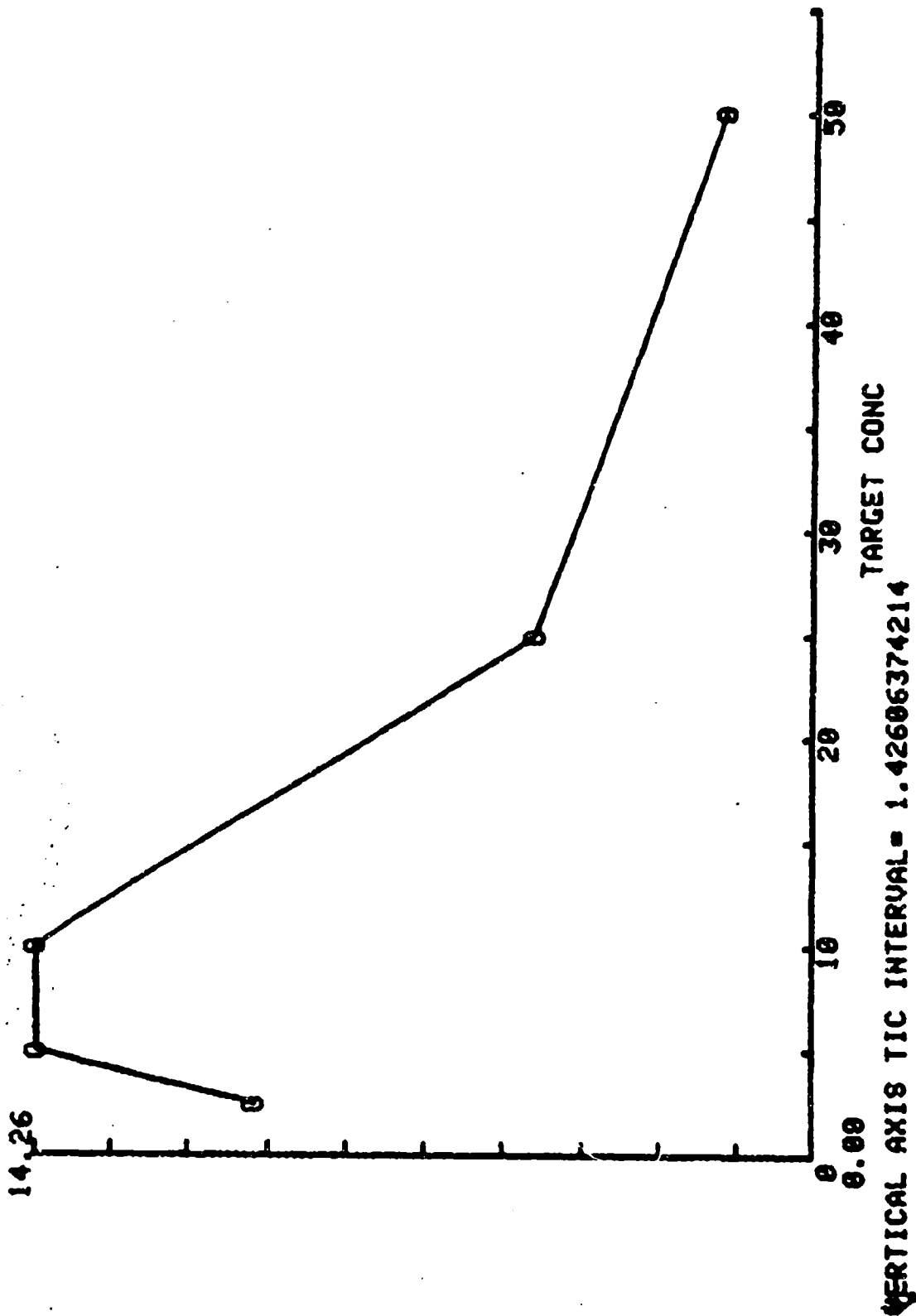
TARGET CONC

Figure II-3. DNP on Metal - Graph of Imprecision

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Table II-5. DNP on Concrete - Target U.S. Found Concentrations

2,4-DINITROPHENOL (24DNP)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.710
	1.010
	1.470
	1.250
5.000	1.320
	1.890
	2.690
	1.920
10.000	2.270
	3.500
	3.800
	3.290
25.000	6.210
	8.430
	8.900
	8.560
50.000	10.800
	17.570
	17.540
	16.980

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Table II-6. DNP on Concrete - Analysis of Target-
Found Concentration Points

2,4-DINITROPHENOL (24DNP)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 10.0350535872

FOUND CONC
MEAN= 6.0095 SD= 5.7433424829

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.308978469256
SLOPE= 0.308136731392
  USE FOR ACCURACY
R= 0.967603816639
MEAN SQR DEV OF POINTS FROM REGRESSION= 2.219418859
ST ERROR EST= 1.4897741166
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7340609640
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 3.0250353561
x(d)= 17.4060978424

65

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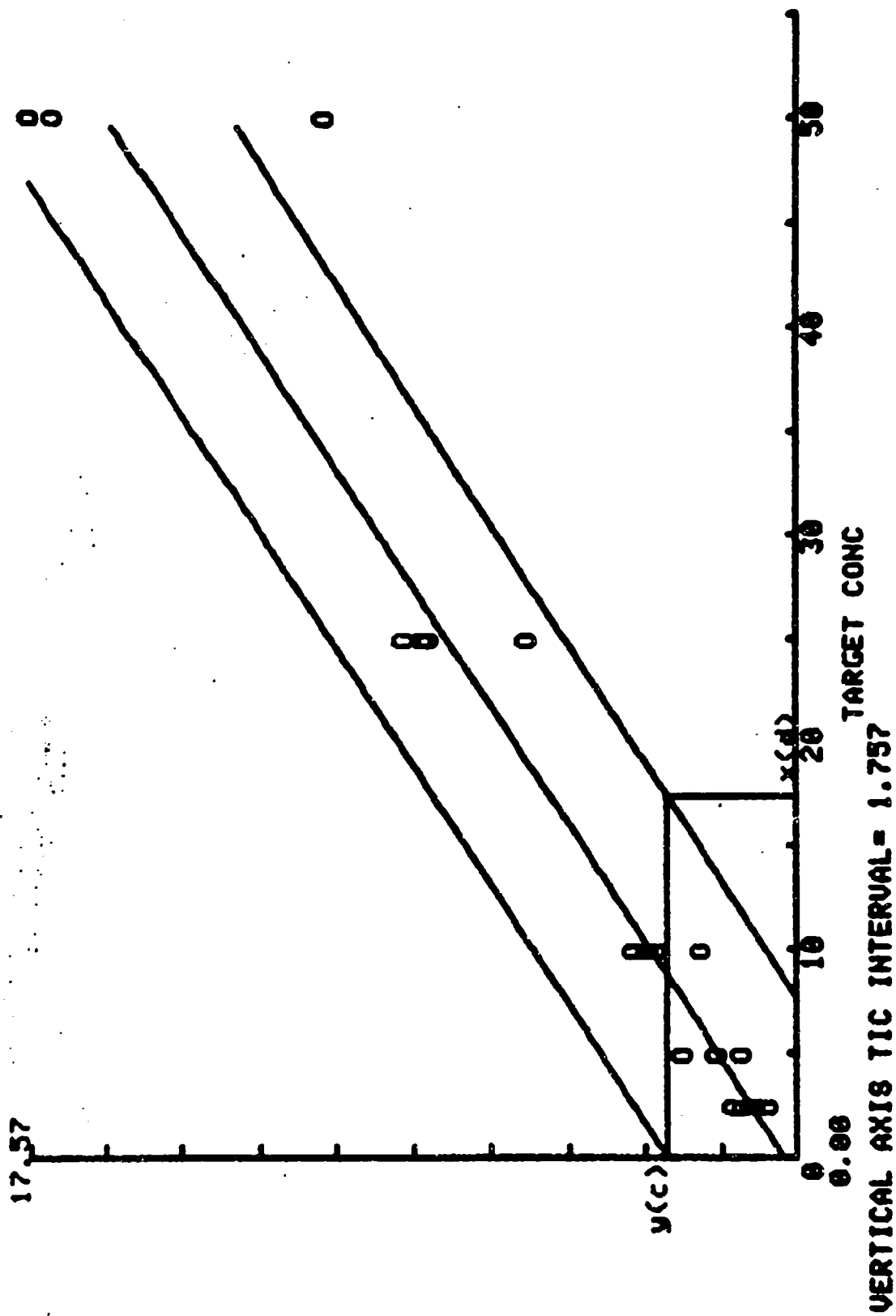
Figure II-4.   DNP on Concrete - Graph of Target-Found Concentration Points

66

Table II-7. DNP on Concrete - Inaccuracy and
Precision Data

2,4-DINITROPHENOL   (24DNP)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.110	0.326	-55.600	29.386
5.000	1.955	0.562	-60.900	28.768
10.000	3.215	0.664	-67.?30	20.649
25.000	8.045	1.246	-67.820	15.483
50.000	15.723	3.293	-68.555	20.944
Means		1.218	-64.145	23.046

67

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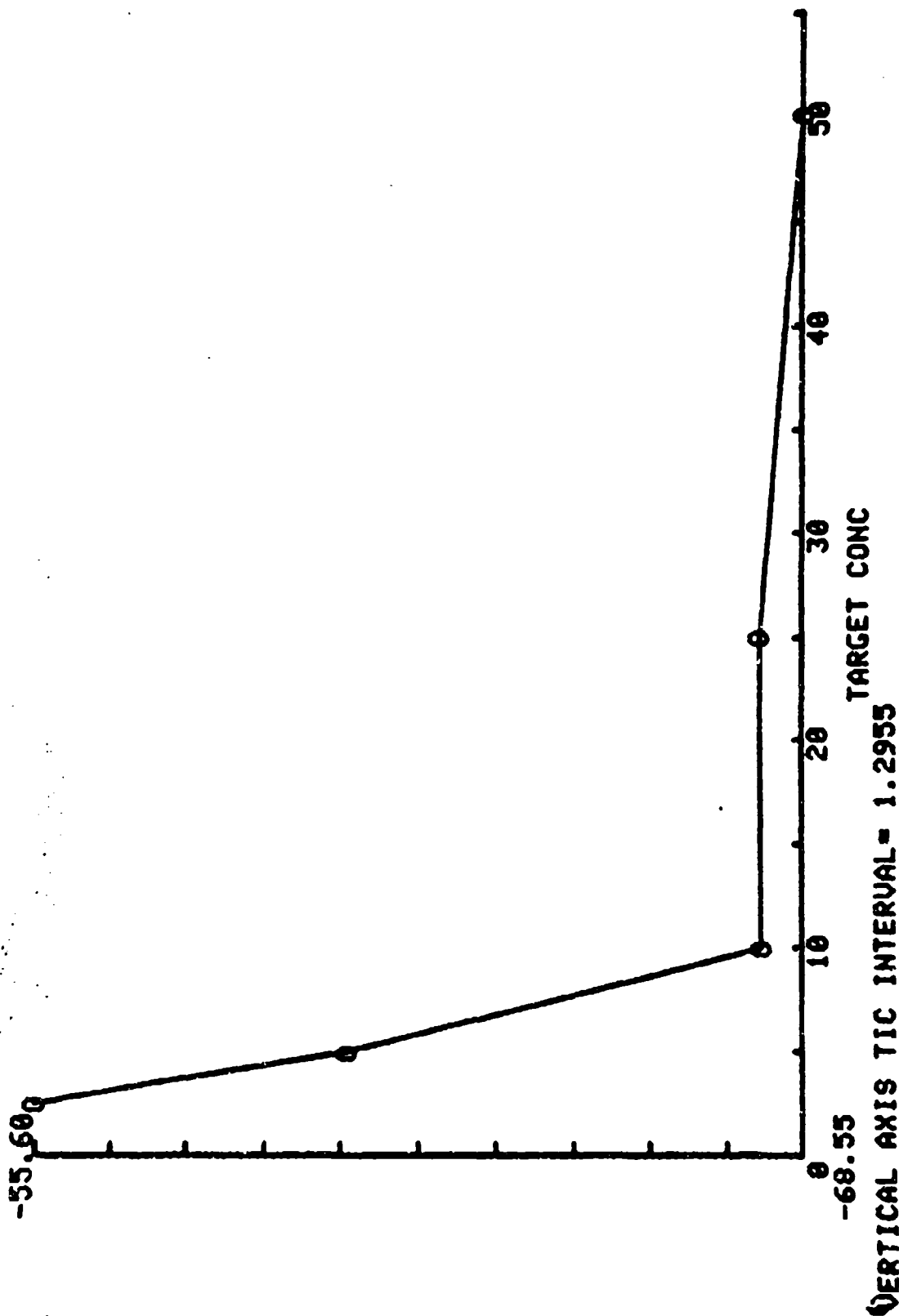
Figure II-5. DNP on Concrete – Graph of Inaccuracy

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2,4-DINITROPHENOL (24DNP)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

29.39

0.00

0

10

20

30

40

50

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 2.93864900726
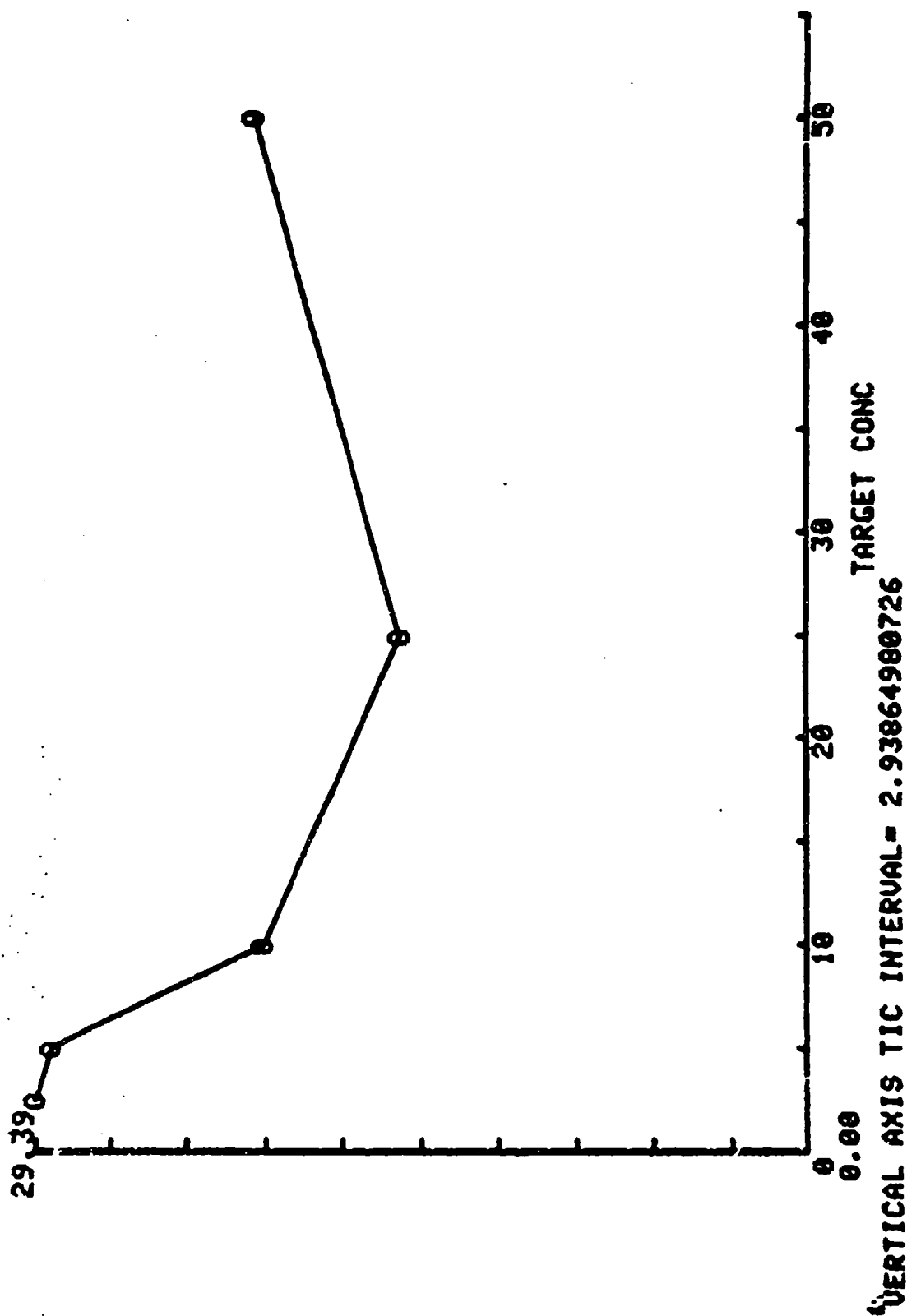
Figure II-6. DNP on Concrete – Graph of Imprecision

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Table II-8. DNP on Concrete (3 days) - Target vs. Found Concentrations

2,4-DINITROPHENOL (24DNP)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.810
	1.470
	1.250
5.000	1.890
	2.690
	1.920
10.000	3.500
	3.800
	3.290
25.000	8.430
	8.980
	8.560
50.000	17.570
	17.540
	16.980

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2,4-DINITROPHENOL   (24DNP)
CONCRETE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 6.592   SD= 6.17940727625

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.31678002589
SLOPE= 0.33920647249
   USE FOR ACCURACY
R= 0.9987819992786
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.10013722929
ST ERROR EST= 8.3164075266662
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 0.9151963148813
x(d)= 3.58062633373

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Figure II-7. DNP on Concrete (3 days) - Graph of Target-Found
Concentration Points

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Table II-10. DNP on Concrete (3 days) - Inaccuracy and Imprecision Data

2,4-DINITROPHENOL (24DNP)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.243	0.230	-50.267	18.584
5.000	2.167	0.453	-56.667	20.929
10.000	3.539	0.256	-64.76)	7.261
25.000	8.657	0.287	-65.373	3.321
50.000	17.363	0.332	-65.273	1.914
Means		0.312	-60.456	10.386

73

Figure II-8. DiiP on Concrete (3 days) - Graph of Inaccuracy

74

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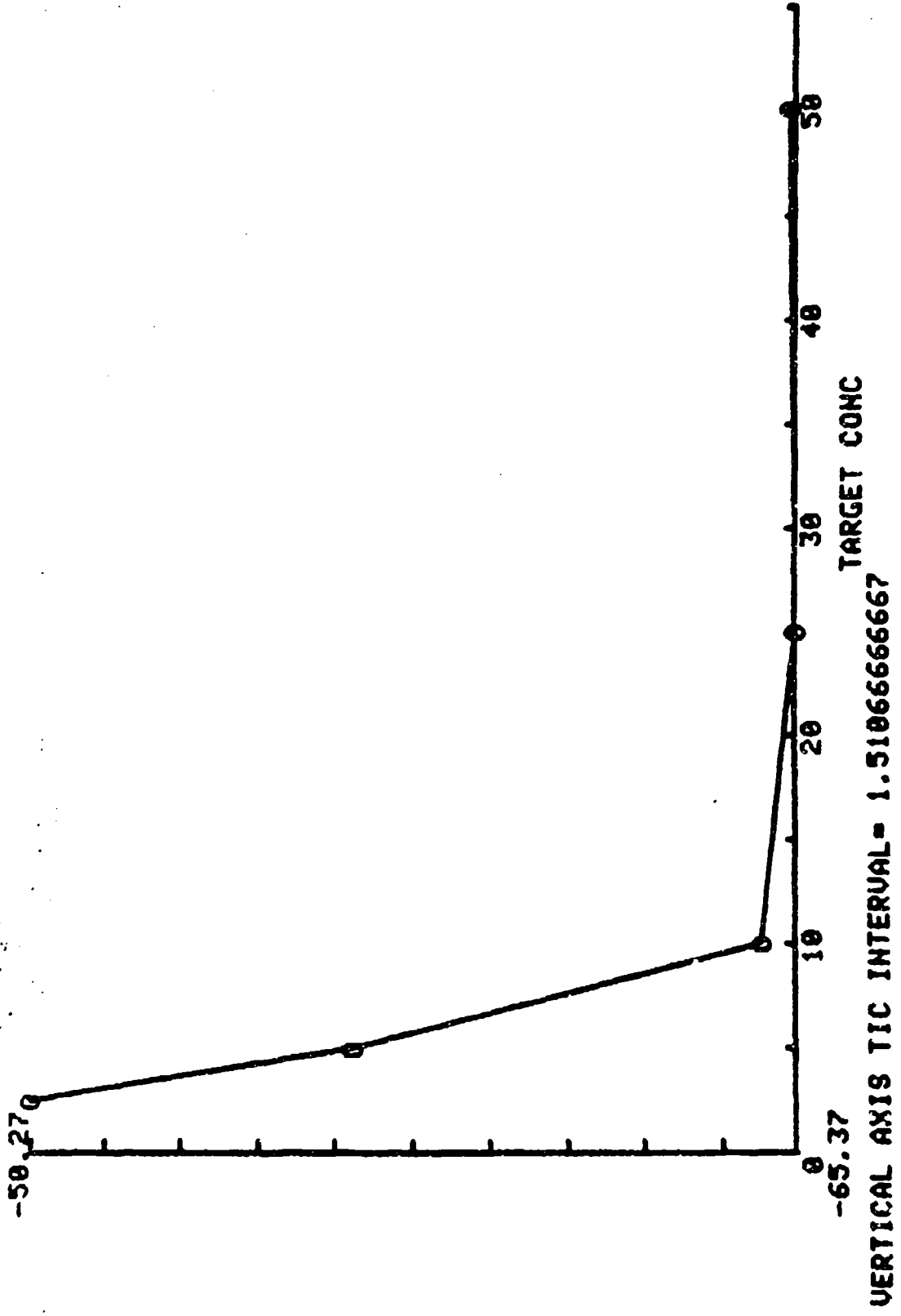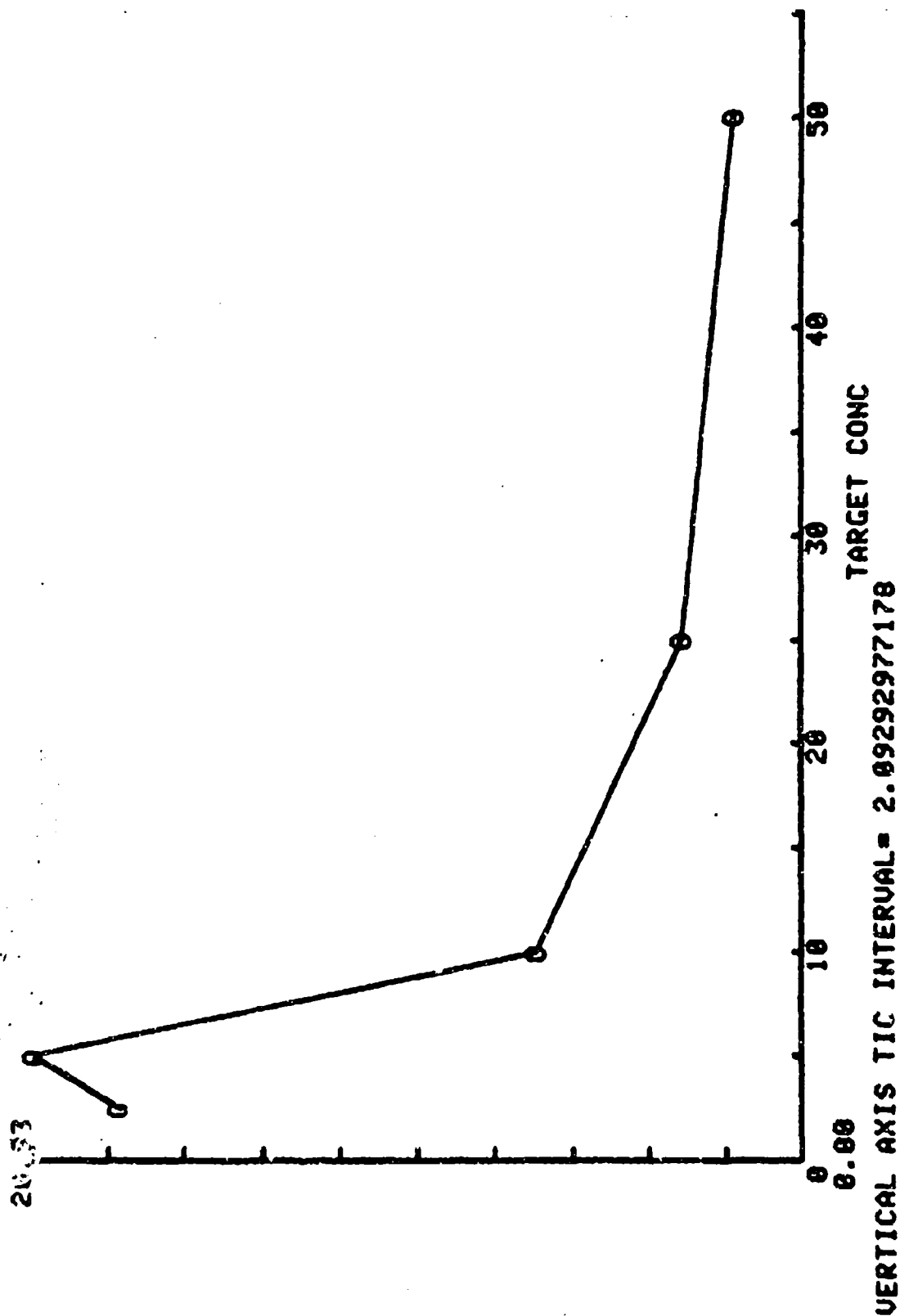
Figure II-9. DNP on Concrete (3 days) - Graph of Imprecision

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Table II-11. DNP on Brick - Target vs. Found Concentrations

2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.000
	1.360
	0.810
	1.110
5.000	1.690
	4.000
	2.780
	3.620
10.000	5.560
	3.500
	4.890
	6.800
25.000	13.450
	10.200
	11.320
	14.100
50.000	28.950
	34.090
	21.730
	26.490

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2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5 SD= 18.0350535872

FOUND CONC
MEAN= 9.8725 SD= 18.2455530148

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.352117718446
SLOPE= 0.552682038835
  USE FOR ACCURACY
R= 0.972875761094
MEAN SQR DEV OF POINTS FROM REGRESSION= 5.92937890036
ST ERROR EST= 2.4350316151
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 4.08728778129
x(d)= 15.8653395681

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2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
FOUND CONC

Figure II-10. DNP on Brick - Graph of Target-Found Concentration Points

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Table II-13. DNP on Brick - Inaccuracy and Imprecision
Data

2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.079	0.230	-57.200	21.461
5.000	3.023	1.024	-39.558	33.885
10.000	5.188	1.375	-48.125	26.514
25.000	12.268	1.819	-50.930	14.830
50.000	27.815	5.146	-44.370	18.501
Means		1.919	-48.035	23.838

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2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.765

TARGET CONC
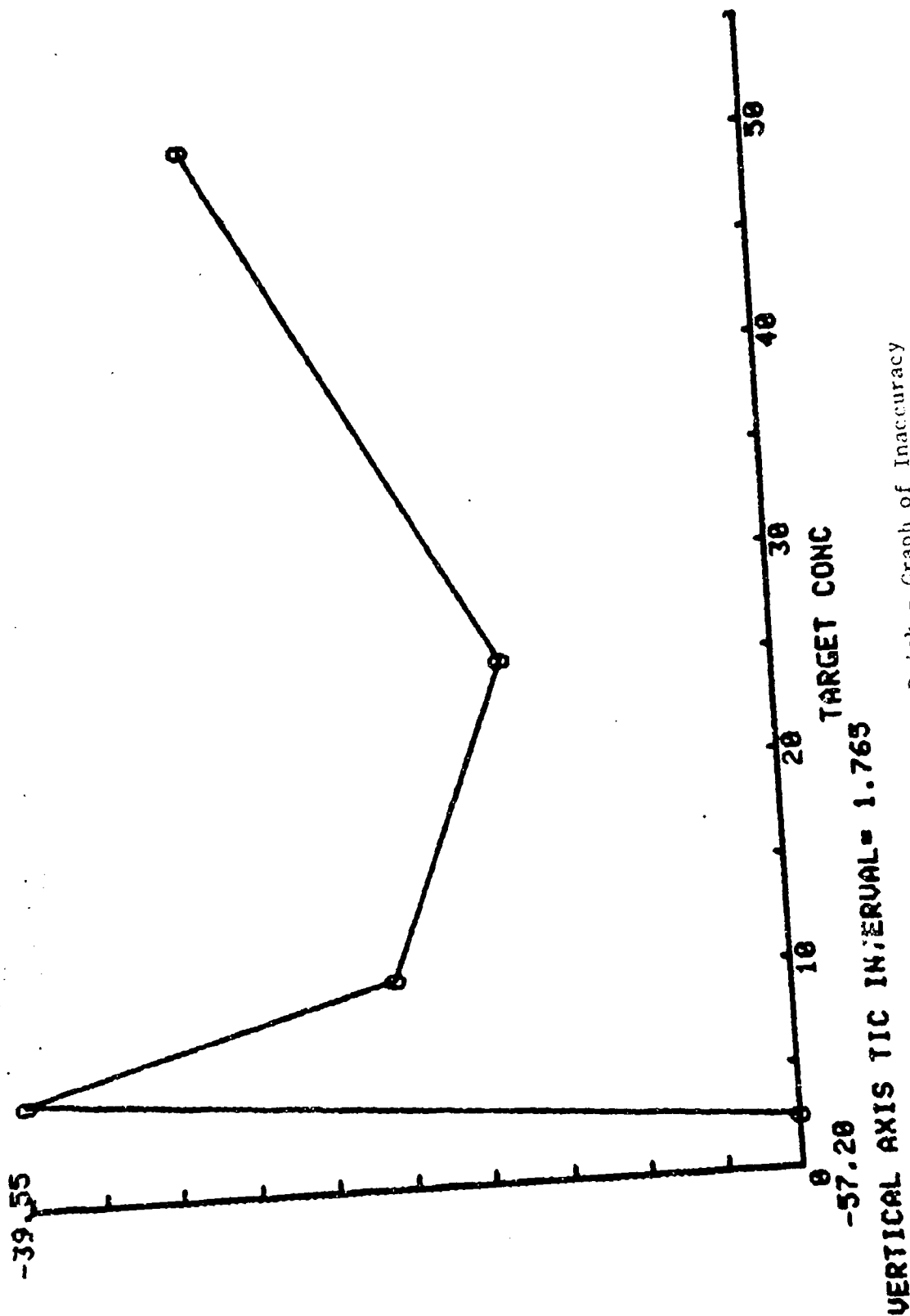
Figure II-11. DNP on Brick – Graph of Inaccuracy

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2,4-DINITROPHENOL (24DNP)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 3.3085415B268
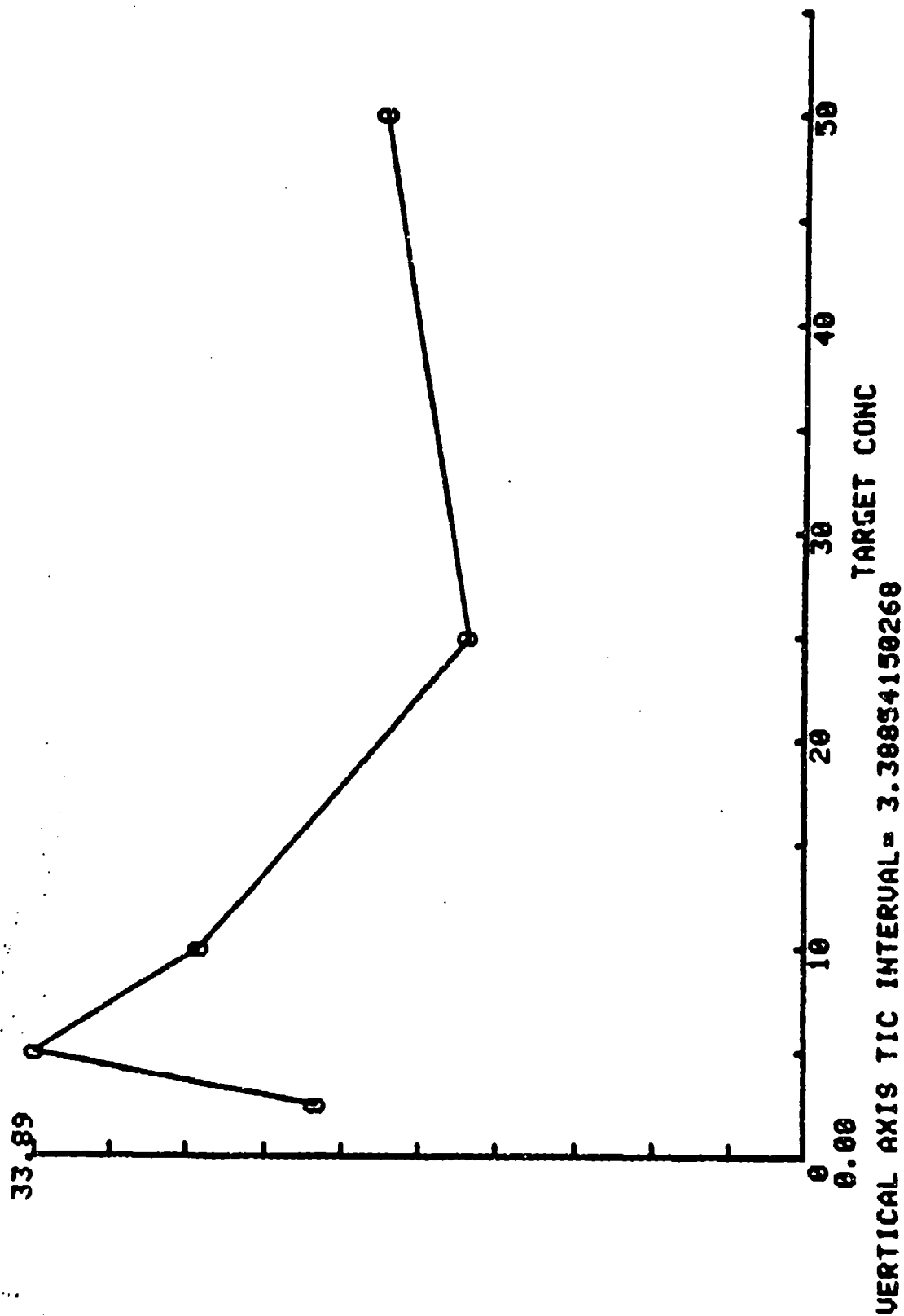
Figure II-12. DNP on Brick – Graph of Imprecision

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Table II-14. DNP on Transite - Target vs. Found Concentrations

2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.980
	0.710
	0.250
	1.280
5.000	2.260
	1.440
	1.200
	1.970
10.000	3.880
	2.380
	2.790
	2.630
25.000	9.700
	7.140
	6.960
	7.850
50.000	24.050
	16.740
	12.550
	15.680

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2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5 SD= 18.8358535872

FOUND CONC
MEAN= 6.082 SD= 6.5553574714B

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.2975364@7767
SLOPE= 0.3448398@05825
  USE FOR ACCURACY
R= 0.94872@859866
MEAN SQR DEV OF POINTS FROM REGRESSION= 4.53277563377
ST ERROR EST= 2.1290316187B
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 3.583@88003391
x(d)= 22.2382838955

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Figure II-13. DNP on Transite – Graph of Target–Found Concentration Points

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Table II-16. DNP on Transite – Inaccuracy and Imprecision Data

2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	0.805	0.437	-67.800	54.704
5.000	1.718	0.484	-65.650	28.183
10.000	2.920	0.662	-70.800	22.667
25.000	7.713	1.327	-69.150	17.206
50.000	17.255	4.867	-65.490	28.205
Means		1.555	-67.778	30.113

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2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 8.531 TARGET CONC
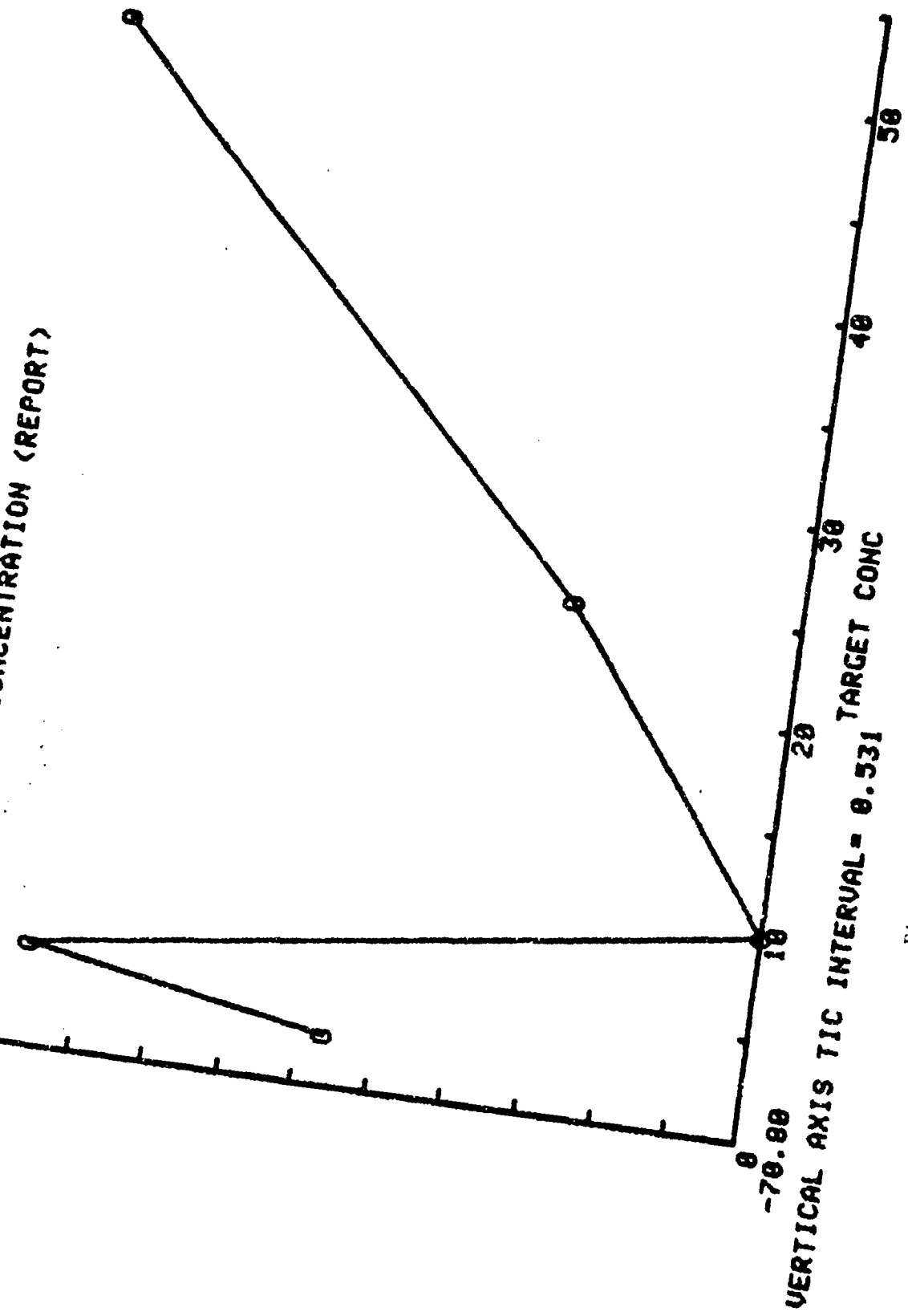
Figure II-14. DNP on Transite — Graph of Inaccuracy

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2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

54.38

0.00

0

10 20 30 40 50

VERTICAL AXIS TIC INTERVAL= 5.4304384209 TARGET CONC
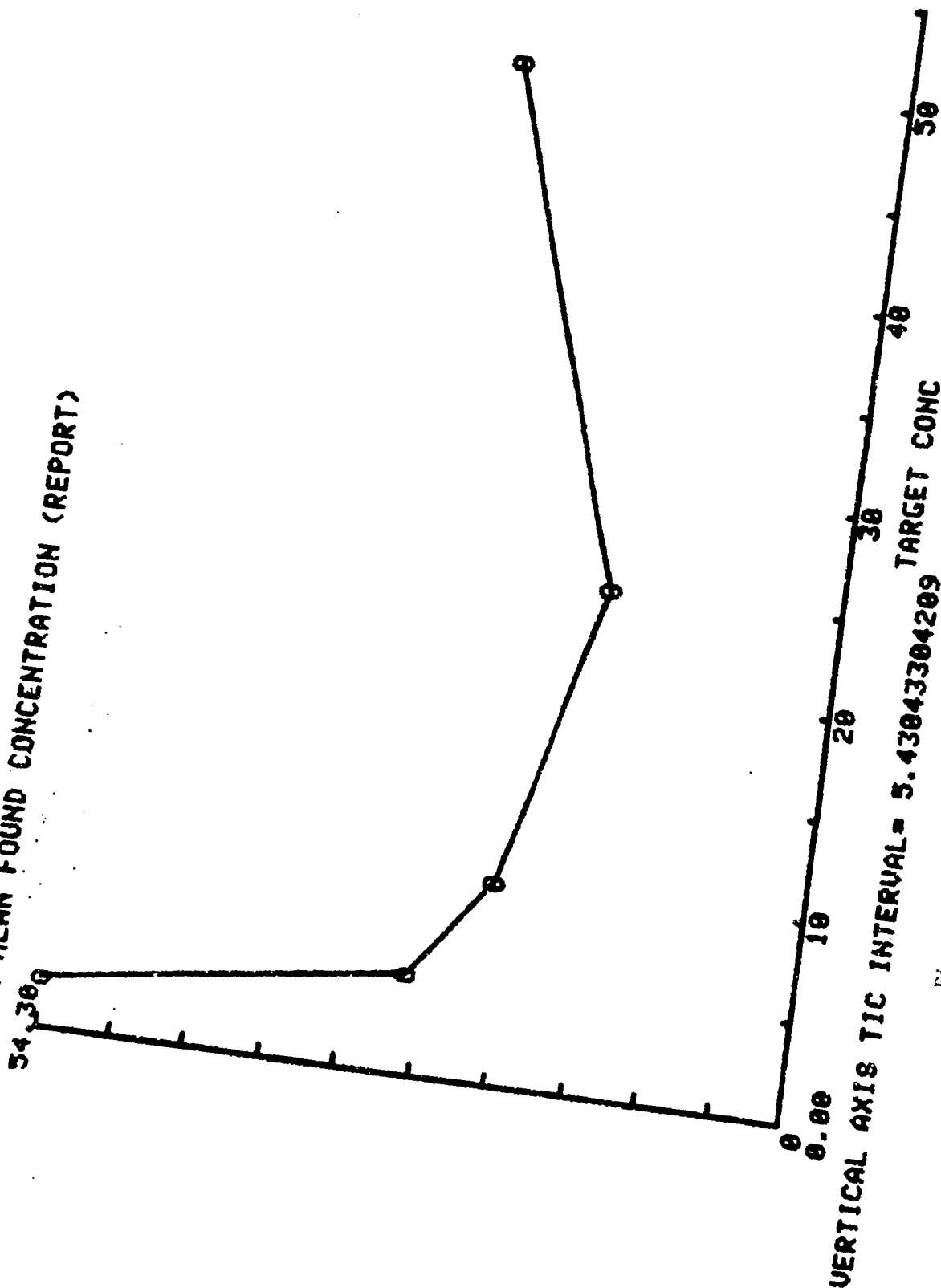
Figure II-15. DNP on Transite - Graph of Imprecision

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Table II-17.   DNP on Transite (3 days) - Target vs. Found Concentrations

2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.710
	0.250
	1.200
5.000	1.440
	1.200
	1.970
10.000	2.380
	2.790
	2.630
25.000	7.140
	6.960
	7.050
50.000	16.740
	12.550
	15.600

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2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 5.38466666667   SD= 5.52760328671

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.16196862567
SLOPE= 0.29981769147
  USE FOR ACCURACY
R= 0.98669183884
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.85526302174
ST ERROR EST= 0.92480431537
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(C)= 1.58708299987
x(d)= 11.5032476282

Figure II-16.   DNP on Transite (3 days) – Graph of Target-Found Concentration Points

Table II-19. DNP on Transite (3 days) - Inaccuracy and Imprecision Data

2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	0.747	0.516	-70.133	69.104
5.000	1.537	0.394	-69.267	25.640
10.000	2.600	9.207	-74.000	7.948
25.000	7.050	0.090	-71.800	1.277
50.000	14.990	2.179	-70.020	14.533
Means		0.677	-71.044	23.700
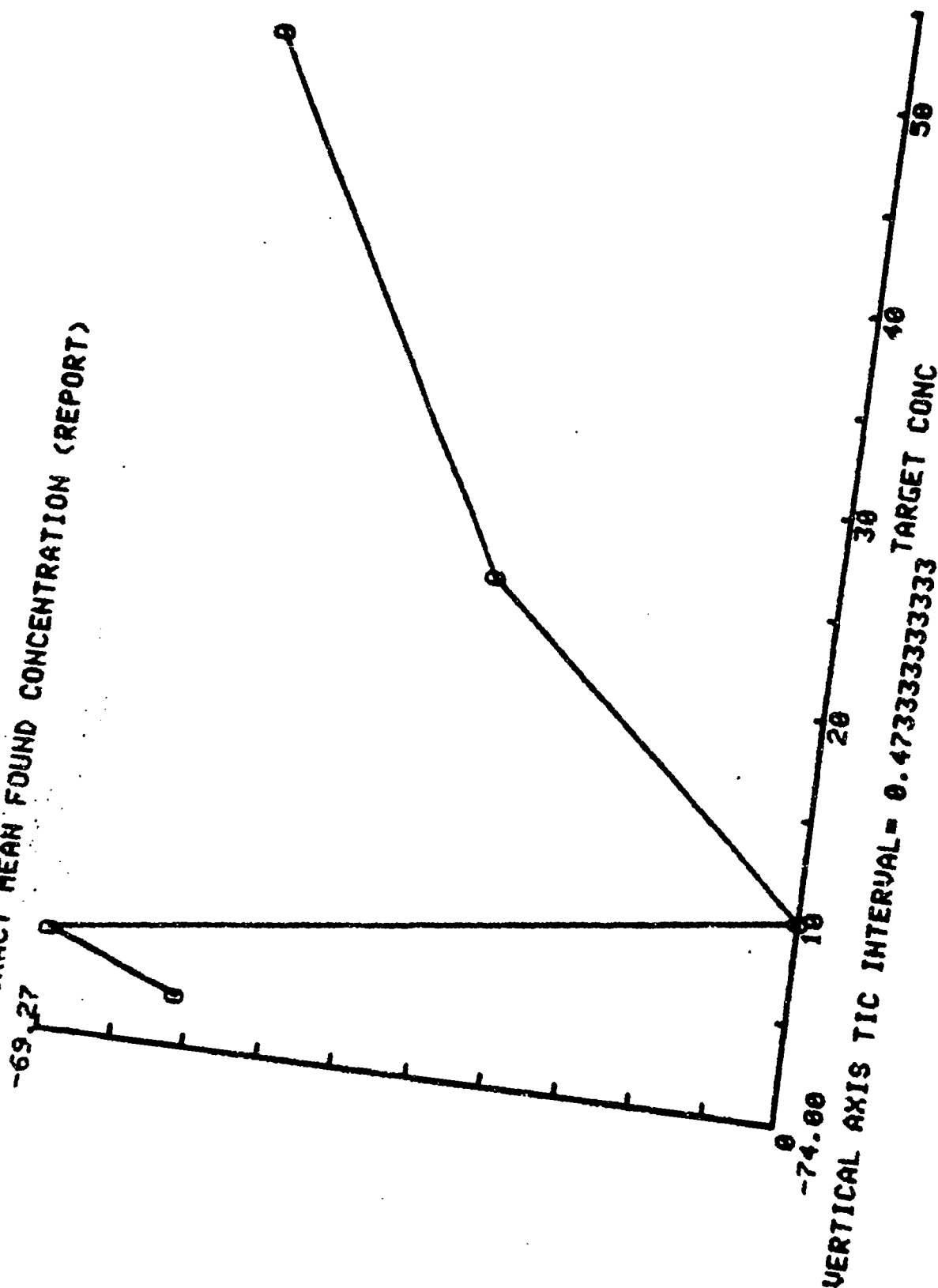
2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 0.473333333333 TARGET CONC

Figure II-17. DNP on Transite (3 days) – Graph of Inaccuracy

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2,4-DINITROPHENOL (24DNP)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 6.91842012189 TARGET CONC
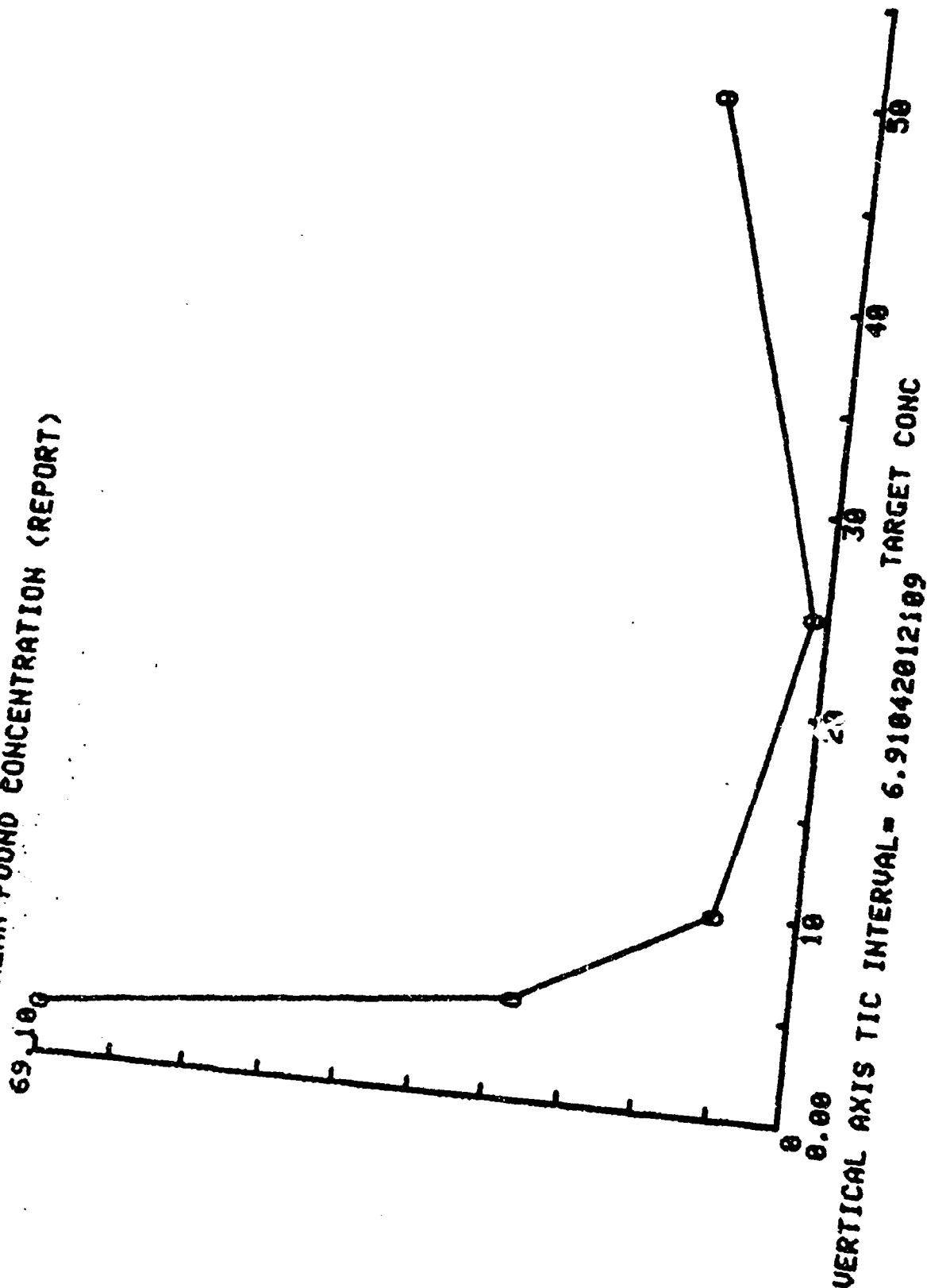
Figure II-18. DNP on Transite (3 days) — Graph of Imprecision

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Table II-20. RDX on Metal – Target vs. Found Concentrations

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
TARGET CONC. VS FOUND CONC.

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.340
	2.040
	2.180
	2.620
5.000	4.100
	4.250
	4.840
	5.070
25.000	24.100
	23.960
	23.070
	24.460
50.000	49.060
	46.620
	46.960
	48.510

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Table II-21. RDX on Metal - Analysis of Target-Found
Concentrations Points

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
ANALYSIS OF 16 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 20.625 SD= 19.6956001855

FOUND CONC
MEAN= 19.64125 SD= 18.9047401022

NO. RUNS 1 TOTAL X-Y ALL RUNS 16 NO. CONCENTR 16
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.14417293233l
SLOPE= 0.959293233083
  USE FOR ACCURACY
R= 0.999424264881
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.440798601532
ST ERROR EST= 0.663920662894
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 14
TWO TAIL P LEVEL IS .1
t= 1.761310l065
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 1.10196465687
x(d)= 2.58815970399

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
FOUND CONC
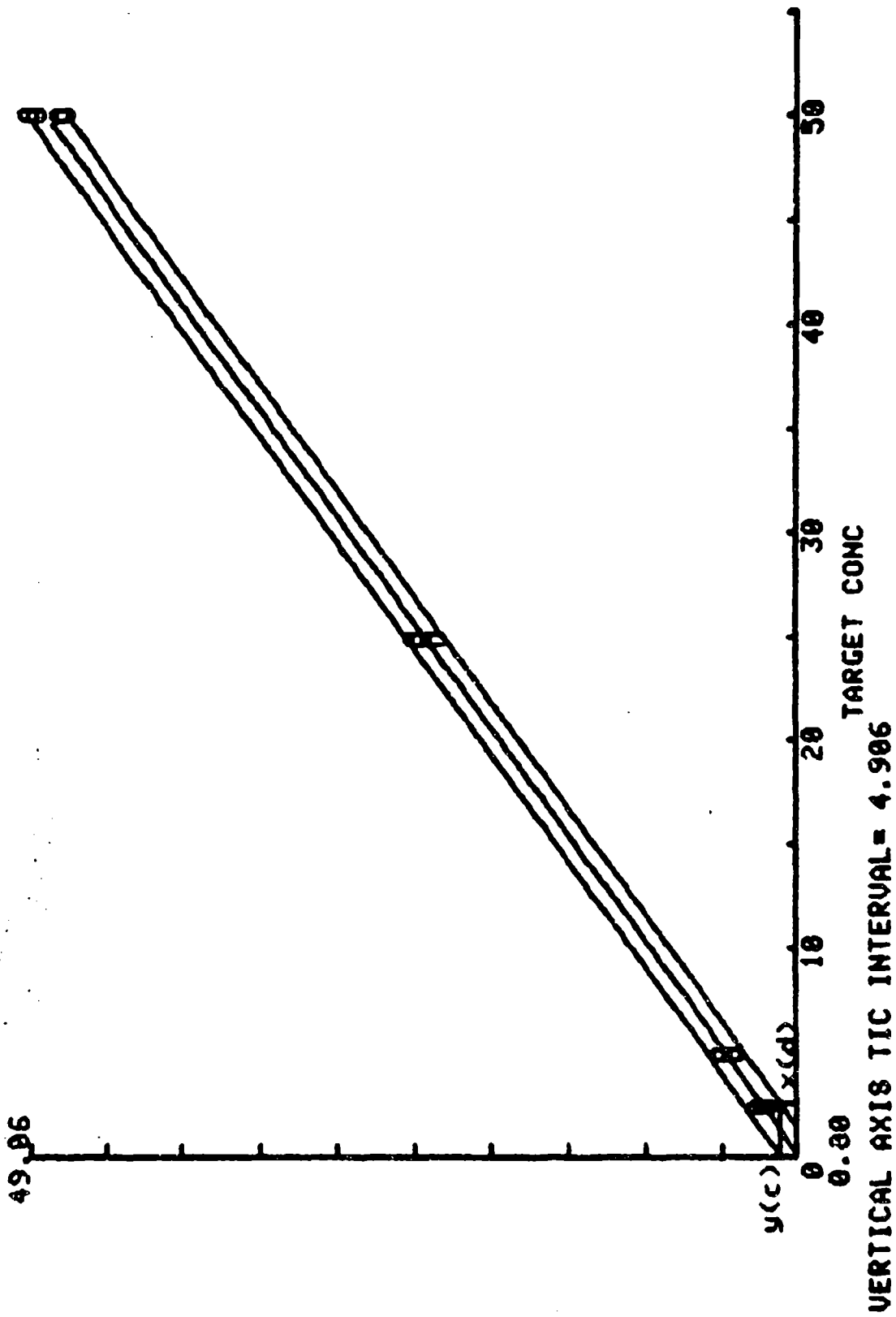
Figure II-19. RDX on Metal – Graph of Target–Found Concentration Points

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Table II-22. RDX on Metal – Inaccuracy and Imprecision
Data

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.295	0.249	-8.200	18.847
5.000	4.565	0.464	-8.700	18.166
25.000	23.918	0.601	-4.330	2.512
50.000	47.788	1.182	-4.425	2.473
Means		0.624	-6.414	6.499
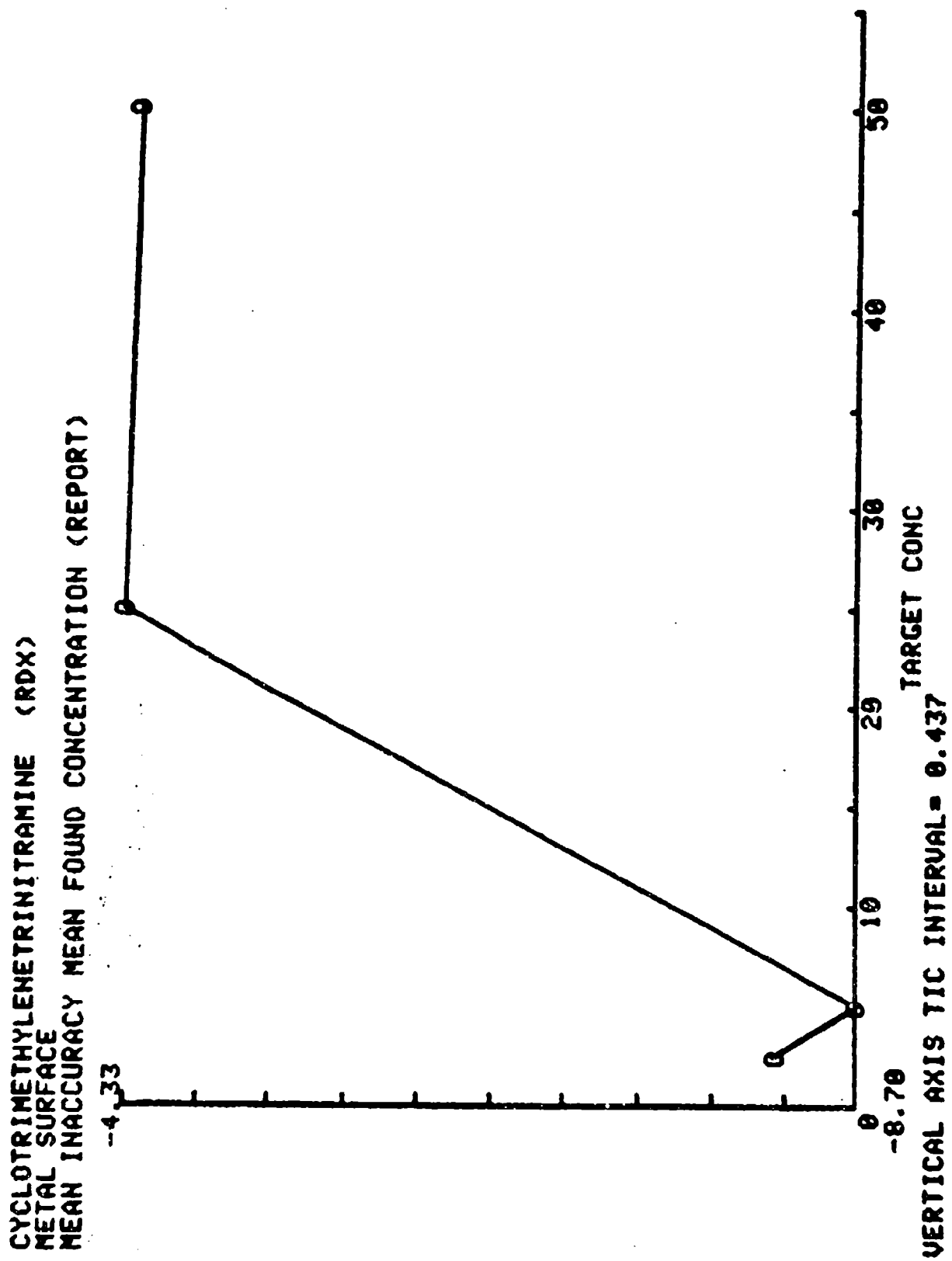
97

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 0.437

Figure II-20. RDX on Metal – Graph of Innaccuracy

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.0846687589
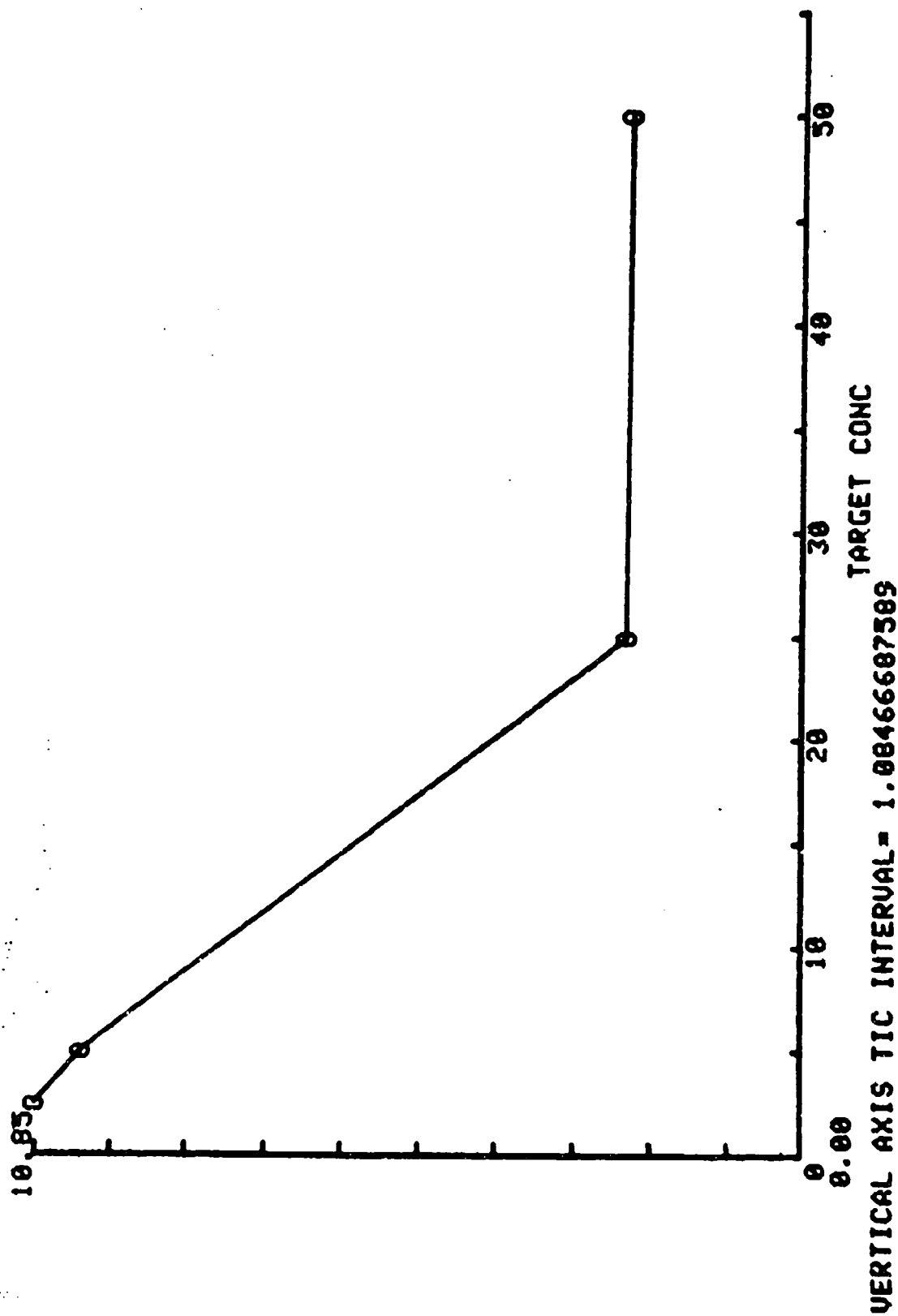
TARGET CONC

Figure II-21. RDX on Metal - Graph of Imprecision

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Table II-23. RDX on Concrete - Target vs. Found Concentrations

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
CONCRETE SURFACE
TARGET CONC. vs FOUND CONC.

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.610
	1.740
	1.950
	2.090
5.000	2.860
	3.710
	4.320
	4.210
10.000	6.730
	7.650
	7.520
	7.930
25.000	19.370
	20.410
	20.410
	17.490
50.000	37.810
	41.120
	41.240
	35.160

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Table II-24. RDX on Concrete – Analysis of Target-
Found Concentration Points

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 14.2665   SD= 14.1353562966

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.1687985543689
SLOPE= 0.7802064087767
   USE FOR ACCURACY
R= 0.9955537644773
MEAN SQR DEV OF POINTS FROM REGRESSION= 1.8713384477
ST ERROR EST= 1.3679650648
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7346896488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 2.3251957523
x(d)= 6.3466977015

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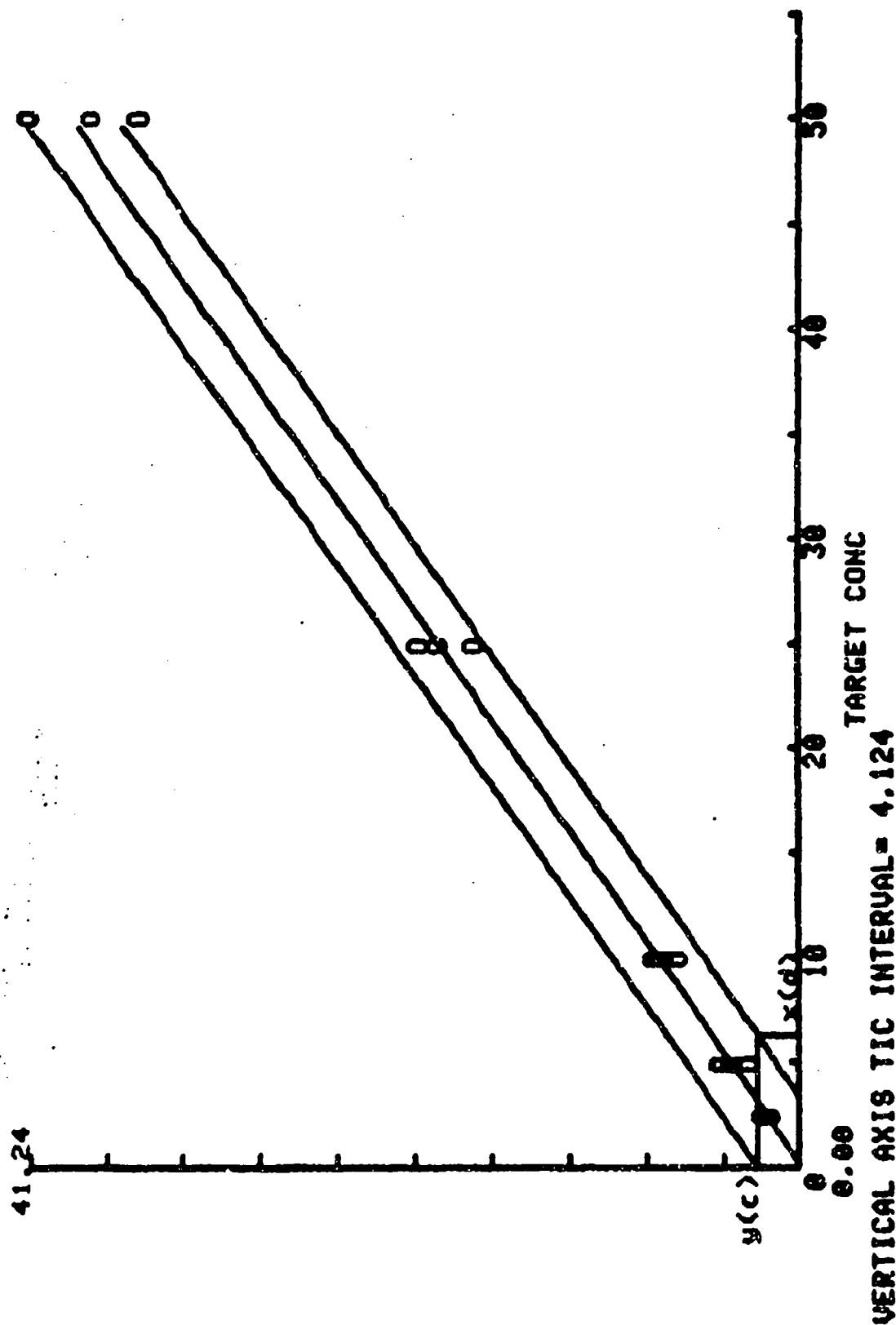
Figure II-22. RDX on Concrete - Graph of Target-
Found Concentration Points

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Cor. Conc ug/10 sq CM	Mn Found Conc ug/10 sq CM	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.848	0.214	-26.100	11.578
5.000	3.775	0.665	-24.500	17.623
10.000	7.458	0.514	-25.425	6.896
25.000	19.420	1.377	-22.320	7.090
50.000	38.833	2.919	-22.335	7.517
Means		1.138	-24.136	10.141

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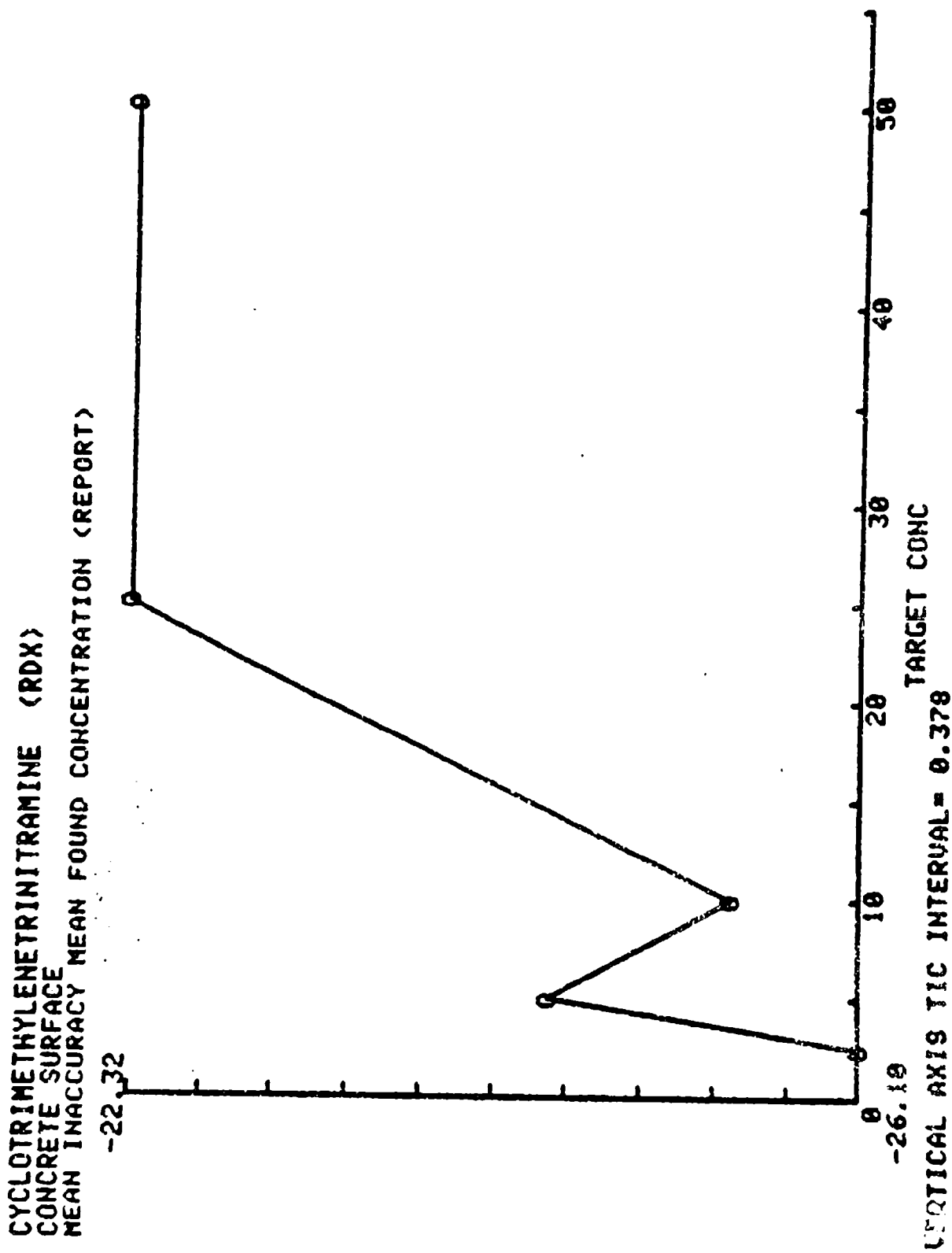
Figure 11-23. RDX on Concrete – Graph of Inaccuracy

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.762697818
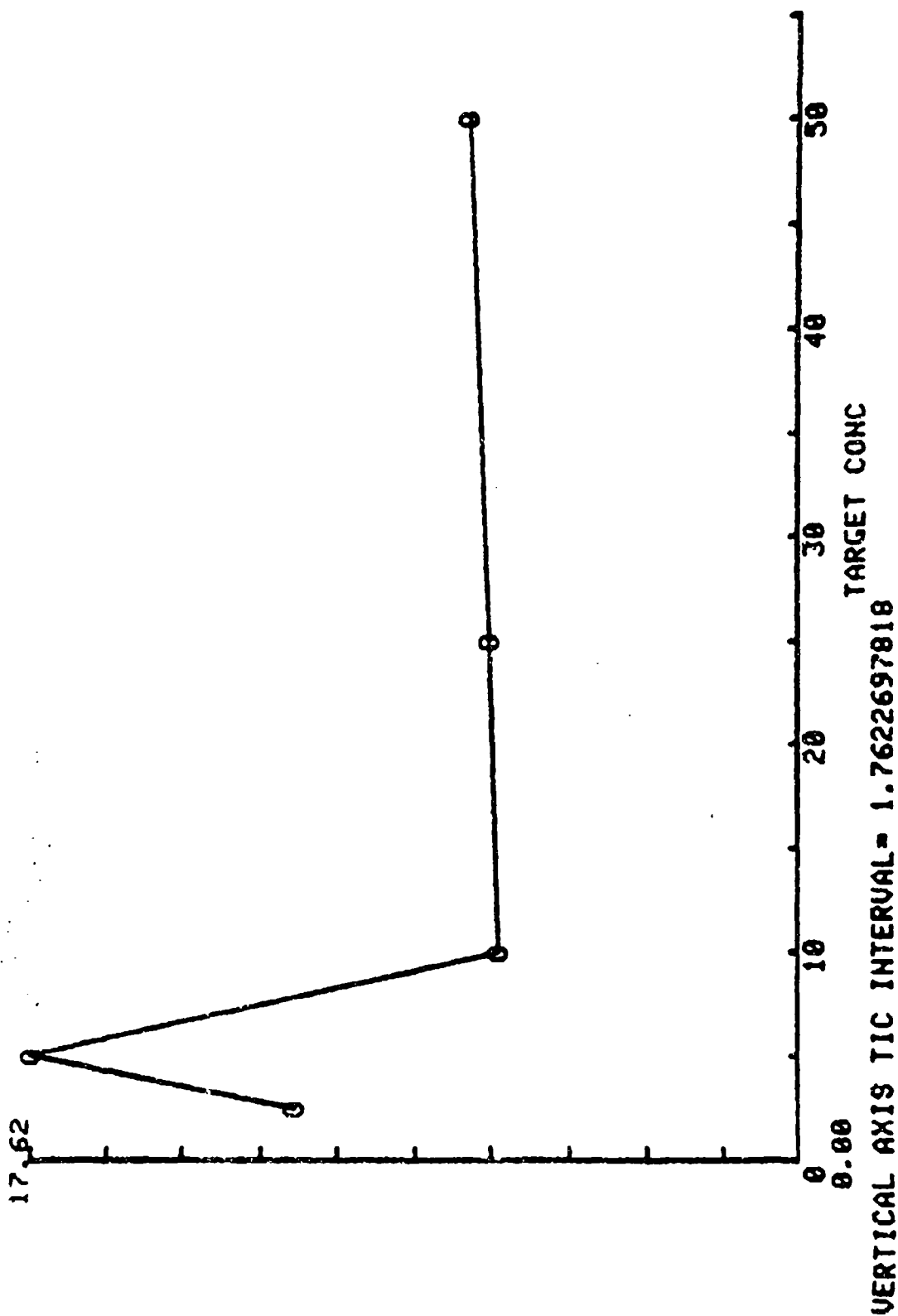
Figure II-24. RDX on Concrete - Graph of Imprecision

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Table II-26. RDX on Brick - Target vs. Found Concentrations (RDX)

CYCLOTRIMETHYLENETRINITRAMINE
BRICK SURFACE
TARGET CONC. vs FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.340
	2.070
	1.020
	1.160
5.000	2.450
	7.380
	4.120
	5.010
10.000	9.080
	6.410
	7.190
	9.900
25.000	21.180
	14.890
	14.480
	20.990
50.000	36.030
	45.030
	24.020
	41.020

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 13.7385   SD= 13.6021253274

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.432779126214
SLOPE= 0.71922815534
  USE FOR ACCURACY
R= 0.95362437934
MEAN SQR DEV OF POINTS FROM REGRESSION= 17.6939762945
ST ERROR EST= 4.20642884135
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U CB
y(c)= 8.10167664923
x(d)= 21.8600746217

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
BRICK SURFACE
FOUND CONC

VERTICAL AXIS TIC INTERVAL= 4.503

TARGET CONC
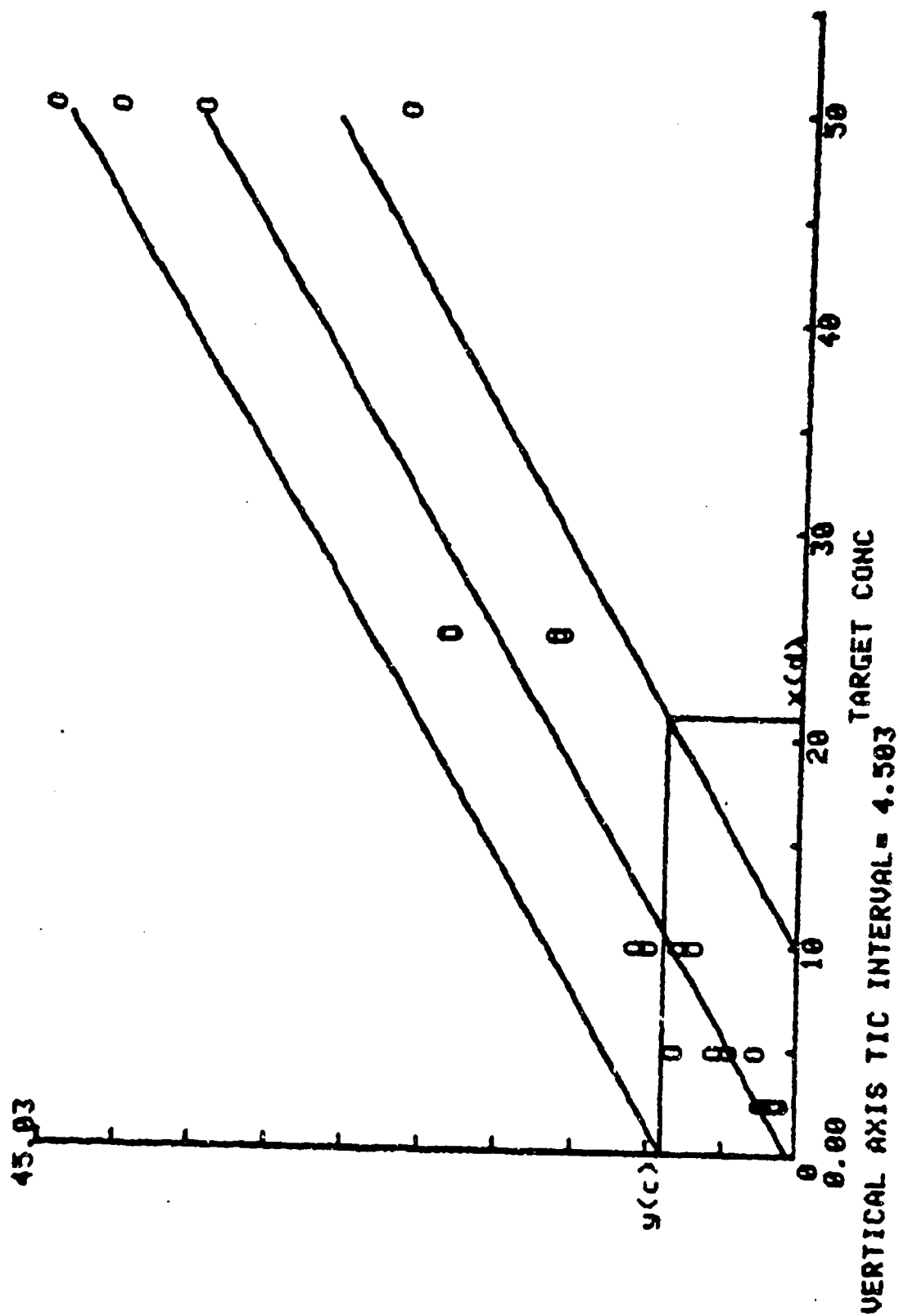
Figure 11-25. RDX on Brick - Graph of Target-Found Concentration Points

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Table 11-28. RDX on Brick - Inaccuracy and Imprecision Data

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.398	0.467	-44.100	33.422
5.000	4.740	2.055	-5.200	43.358
10.000	8.145	1.620	-18.550	19.894
25.000	17.885	3.700	-28.460	20.686
50.000	36.525	9.113	-26.950	24.951
Means		3.391	-24.652	28.462

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)
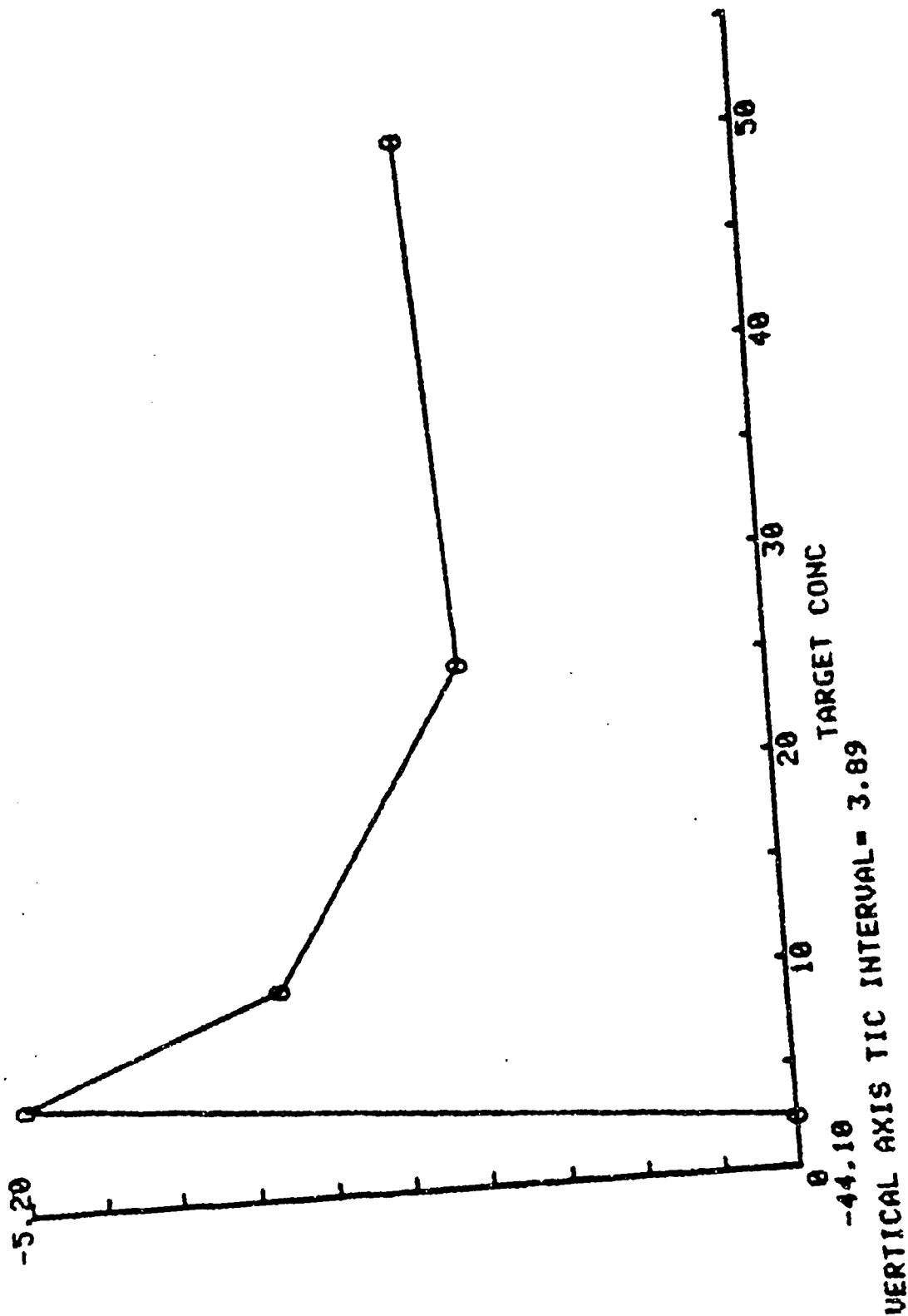
TARGET CONC

VERTICAL AXIS TIC INTERVAL= 3.89

MEAN INACCURACY= 3.89

-5.20

-44.18

Figure II-26.   RDX on Brick – Graph of Inaccuracy

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 4.3357723994?
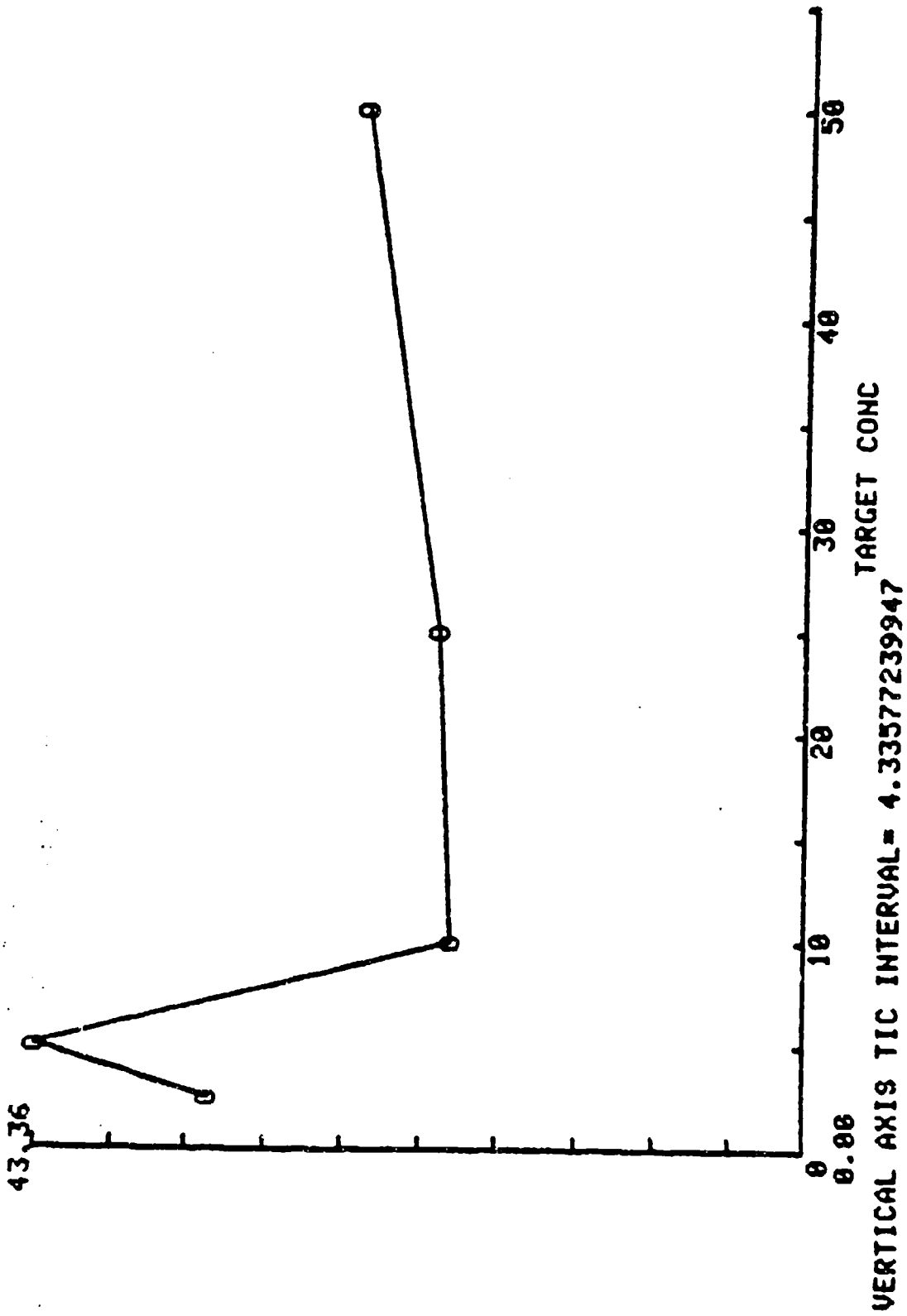
TARGET CONC

Figure 11-27. RDX on Brick - Graph of Imprecision

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Table II-29. RDX on Transite - Target vs. Found
Concentrations

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.710
	1.640
	1.570
	1.410
5.000	1.610
	3.900
	3.670
	3.480
10.000	2.630
	7.590
	7.150
	7.840
25.000	6.640
	15.830
	19.870
	18.270
50.000	12.540
	39.670
	44.350
	38.870

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 11.922   SD= 13.6804811396

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.544051375404
SLOPE= 0.6738409614887
 USE FOR ACCURACY
R= 0.888327791599
MEAN SQR DEV OF POINTS FROM REGRESSION= 41.6587590559
ST ERROR EST= 6.45435969372
 USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 11.2231552201
x(d)= 34.829209243

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
FOUND CONC

44.35

y(c)

0.00

x(d)

20   30   40   50

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 4.435
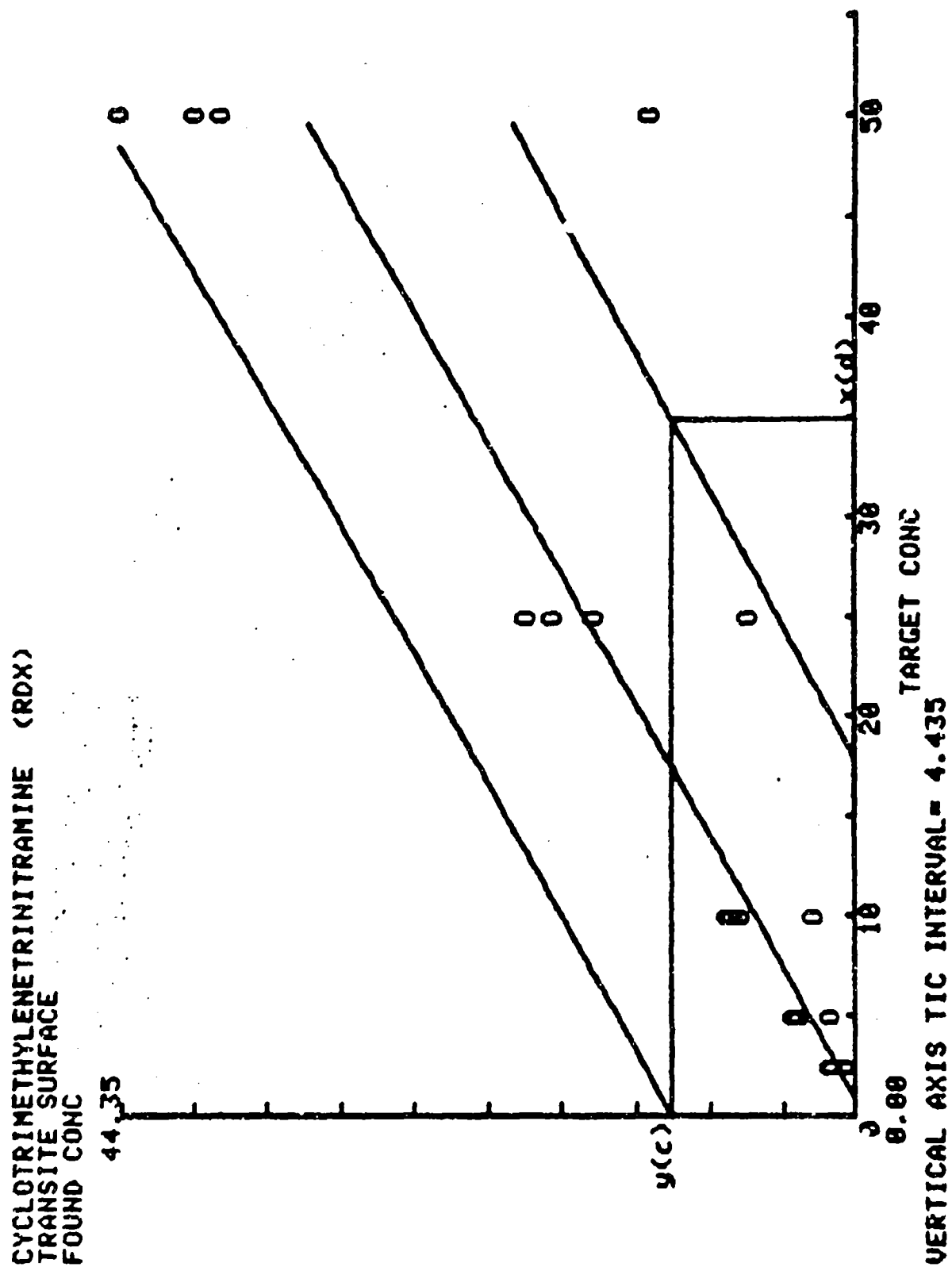
Figure 11-28. RDX on Transite – Graph of Target-Found
Concentration Points

Table II-31. RDX on Transite - Inaccuracy and Imprecision Data

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.333	0.426	-46.700	31.971
5.000	3.165	1.051	-36.700	33.200
10.000	6.303	2.465	-36.975	39.118
25.000	15.153	5.913	-39.390	39.024
50.000	33.658	14.328	-32.685	42.571
Means		4.837	-38.490	37.175

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE MEAN FOUND CONCENTRATION (REPORT)
MEAN INACCURACY
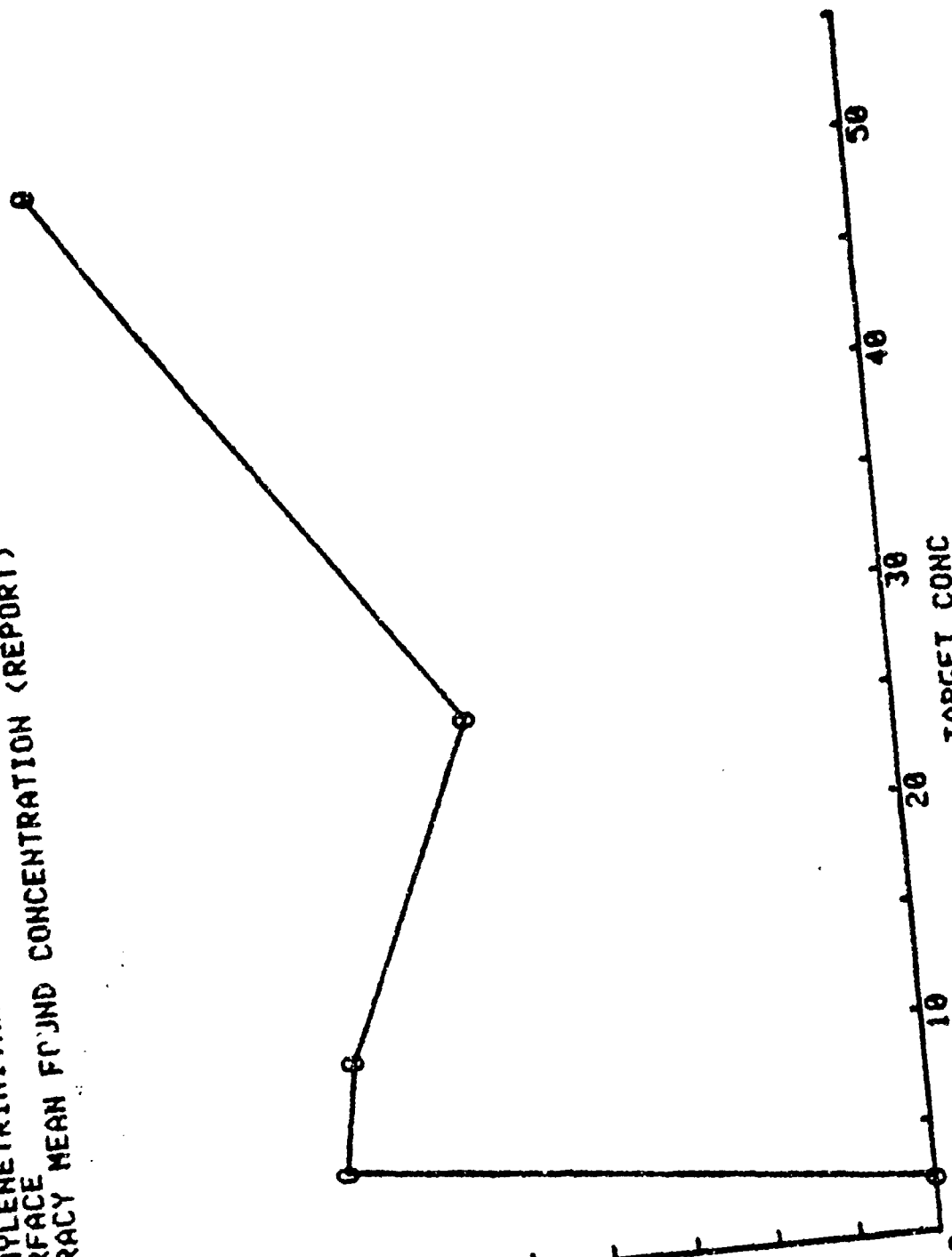
VERTICAL AXIS TIC INTERVAL= 1.4015

TARGET CONC

Figure 11-29. RDX on Transite - Graph of Inaccuracy

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

42.57

0.00

0   10   20   30   40   50

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 4.25788334783
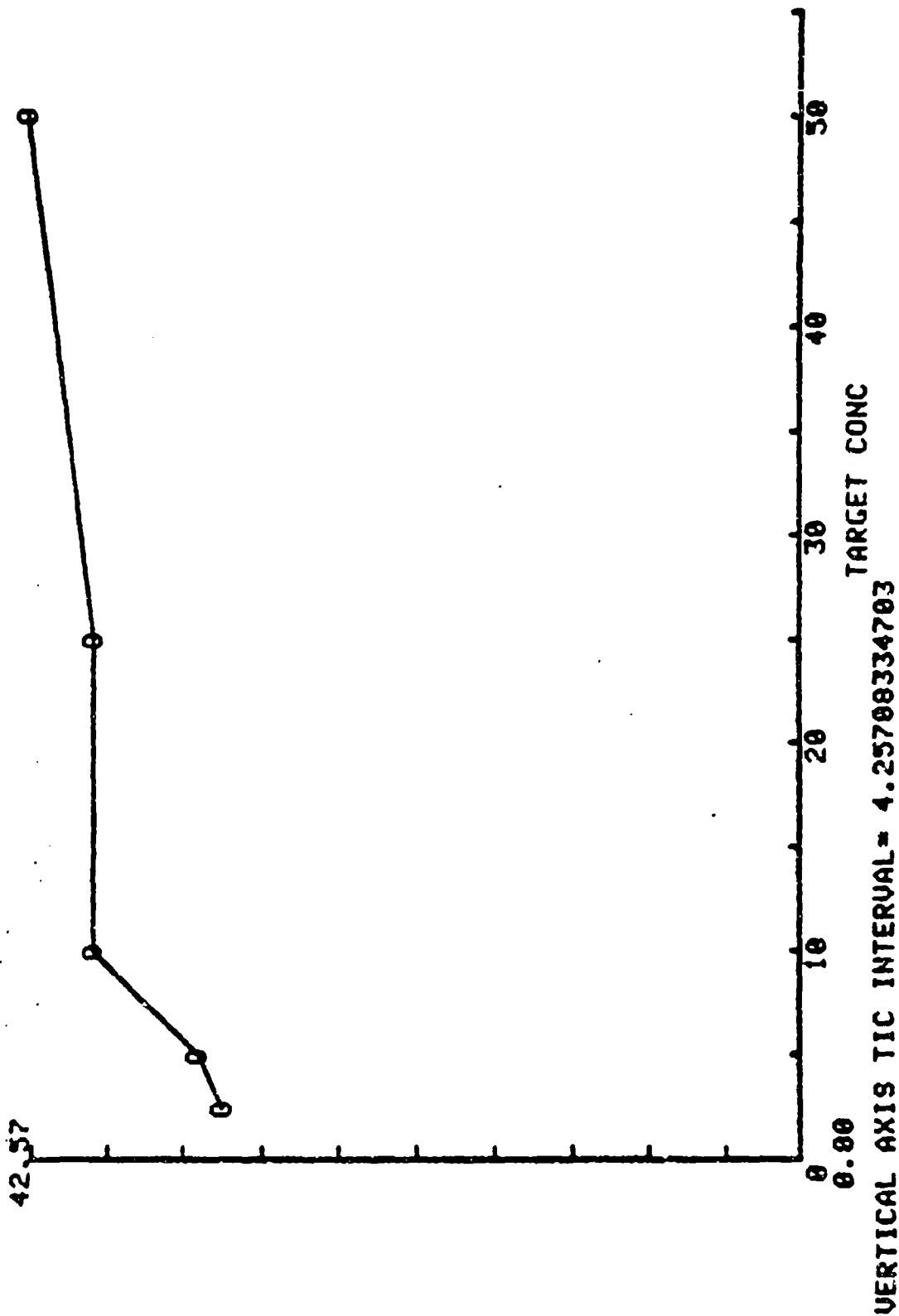
Figure II-30.   RDX on Transite - Graph of Imprecision

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Table II-32. RDX on Transite (3 days) – Target vs. Found Concentrations

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.640
	1.570
	1.410
5.000	3.900
	3.670
	3.480
10.000	7.590
	7.150
	7.840
25.000	15.830
	19.870
	18.270
50.000	39.670
	44.350
	38.070

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Table II-33. RDX on Transite (3 days) – Analysis of
Target-Found (Concentration Points)

```
CYCLOTRIMETHYLENETRINITRAMINE  (RDX)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 14.2873333333   SD= 14.9412293751

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.80649137001
SLOPE= 0.815882416397
  USE FOR ACCURACY
R= 0.993578286336
MEAN SQR DEV OF POINTS FROM REGRESSION= 3.07788848387
ST ERROR EST= 1.75436837747
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 2.51147198116
x(d)= 8.04284789281
```
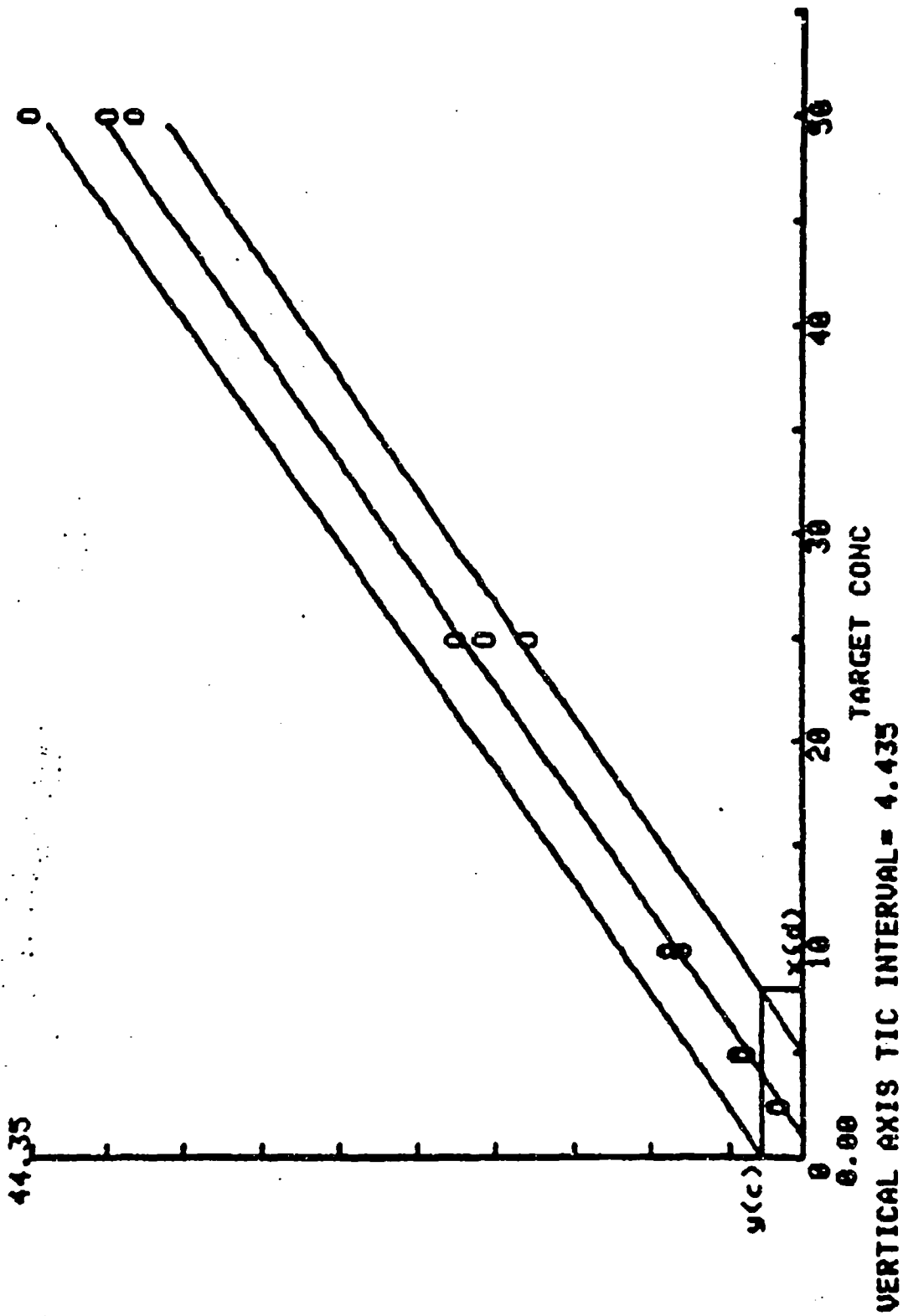
Figure 11-31. RDX on Transite (3 days) - Graph of Target-Found Concentration Points

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Table II-34. RDX on Transite (3 days) - Inaccuracy and
Imprecision Data

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/18 sq cm	Mn Found Conc ug/18 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.540	0.118	-38.400	7.656
5.000	3.683	0.210	-26.333	5.718
10.000	7.527	0.349	-24.733	4.641
25.000	17.990	2.035	-28.040	11.309
50.000	40.697	3.263	-18.607	8.819
Means		1.195	-27.223	7.467

CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.9793333333   TARGET CONC

Figure Il-32.   RDX on Transite (3 days) - Graph of
Inaccuracy

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CYCLOTRIMETHYLENETRINITRAMINE (RDX)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

11.31

VERTICAL AXIS TIC INTERVAL= 1.13090739086
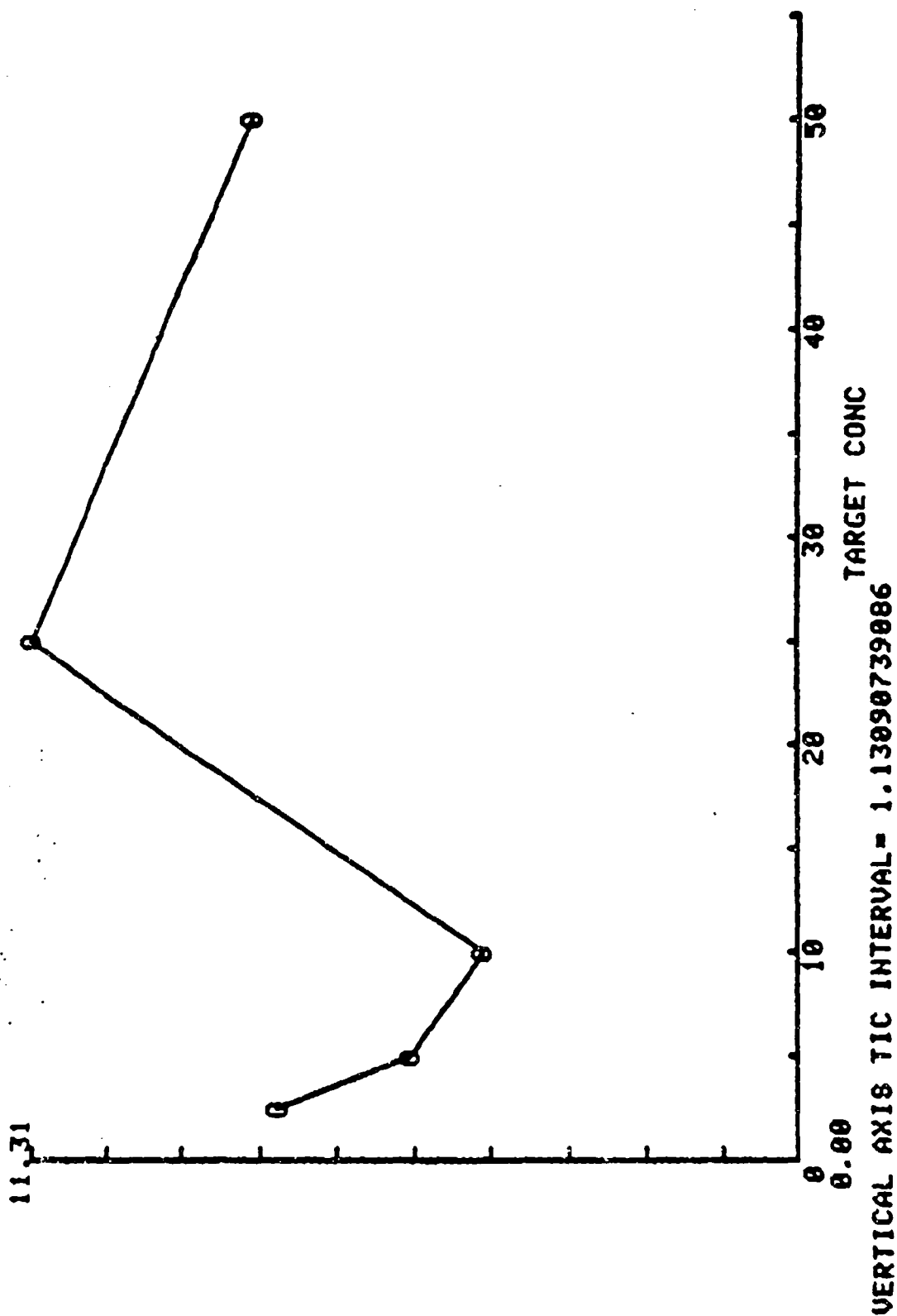
TARGET CONC

Figure II-33. RDX on Transite (3 days) - Graph of
Imprecision

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Table II-35. TNB on Metal - Target vs. Found (Concentrations)

1,3,5-TRINITROBENZENE   (135TNB)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.130
	2.290
	2.280
	2.470
5.000	3.690
	4.460
	4.740
	4.820
10.000	9.380
	8.150
	9.600
	10.190
25.000	23.560
	23.480
	25.550
	24.340
50.000	46.760
	47.630
	46.340
	48.390

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1,3,5-TRINITROBENZENE (135TNB)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 17.5125   SD= 17.1872997405

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.1023139915858
SLOPE= 0.9521521O356
  USE FOR ACCURACY
R= 0.9991164467986
MEAN SQR DEV OF POINTS FROM REGRESSION= 0.5507528901156
ST ERROR EST= 0.7421272273556
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7348696488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 1.2506866685
x(d)= 2.8318868416

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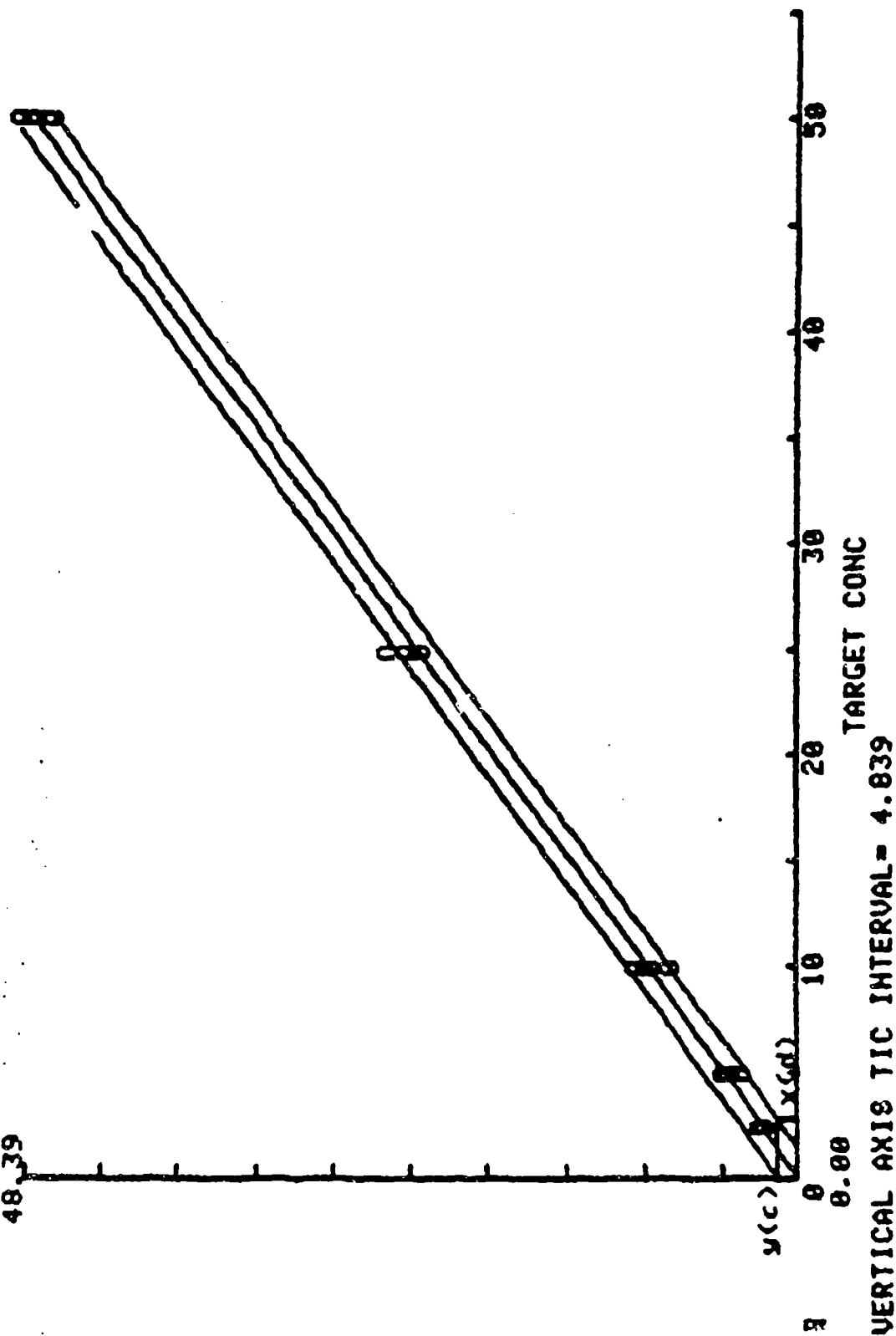
Figure II-34. TNB on Metal – Graph of Target-Found
Concentration Points

Table II-37. TNB on Metal - Inaccuracy and Imprecision
Data

1,3,5-TRINITROBENZENE (135TNB)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.293	0.139	-8.300	6.869
5.000	4.428	0.515	-11.450	11.639
10.000	9.330	0.858	-6.700	9.194
25.000	24.233	0.960	-3.070	3.962
50.000	47.280	0.914	-5.440	1.934
Means		0.677	-6.992	6.568

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1,3,5-TRINITROBENZENE (135TNB)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 8.838

TARGET CONC
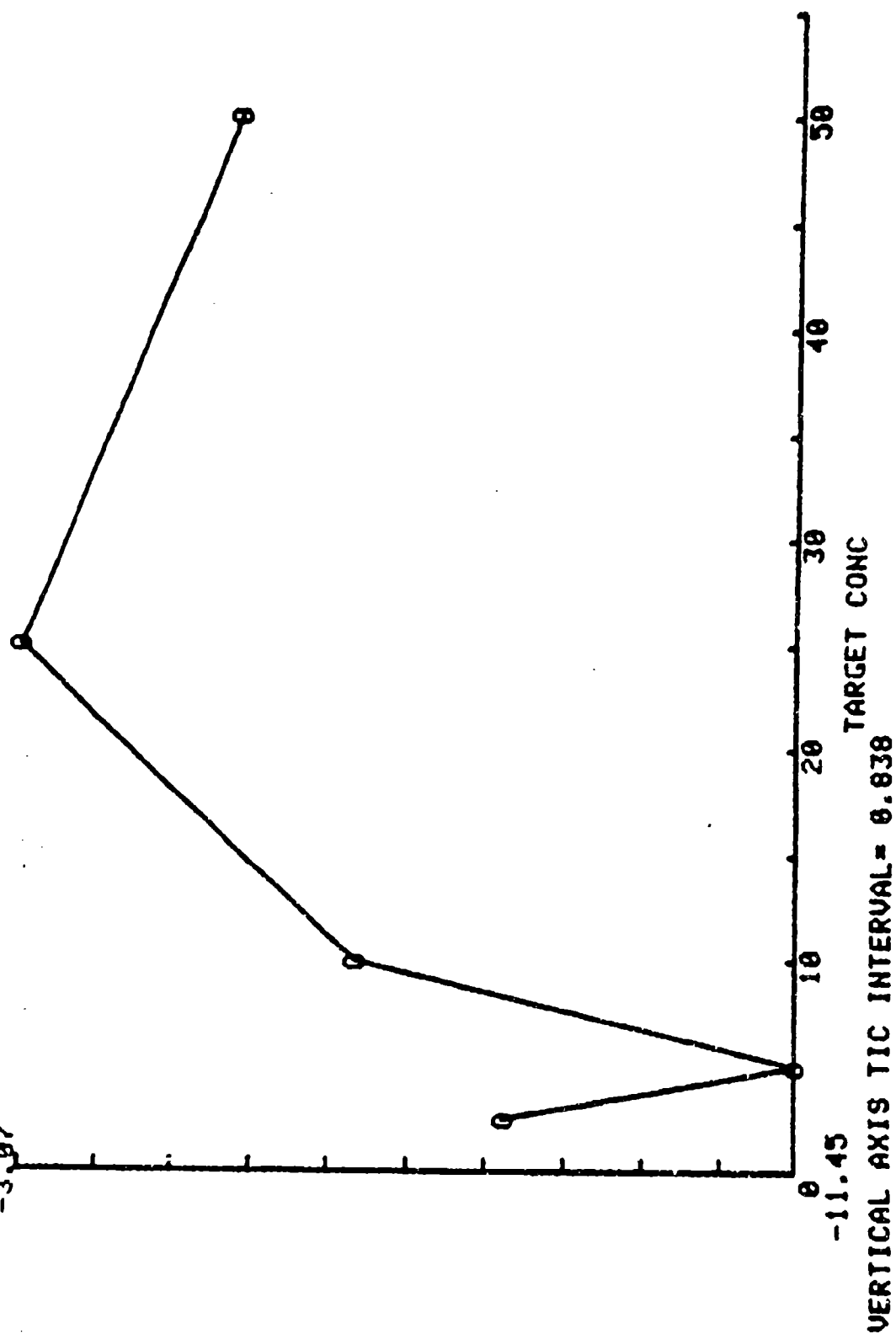
Figure I1-35. TNB on Metal – Graph of Inaccuracy

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1,3,5-TRINITROBENZENE (135TNB)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.1639153*399
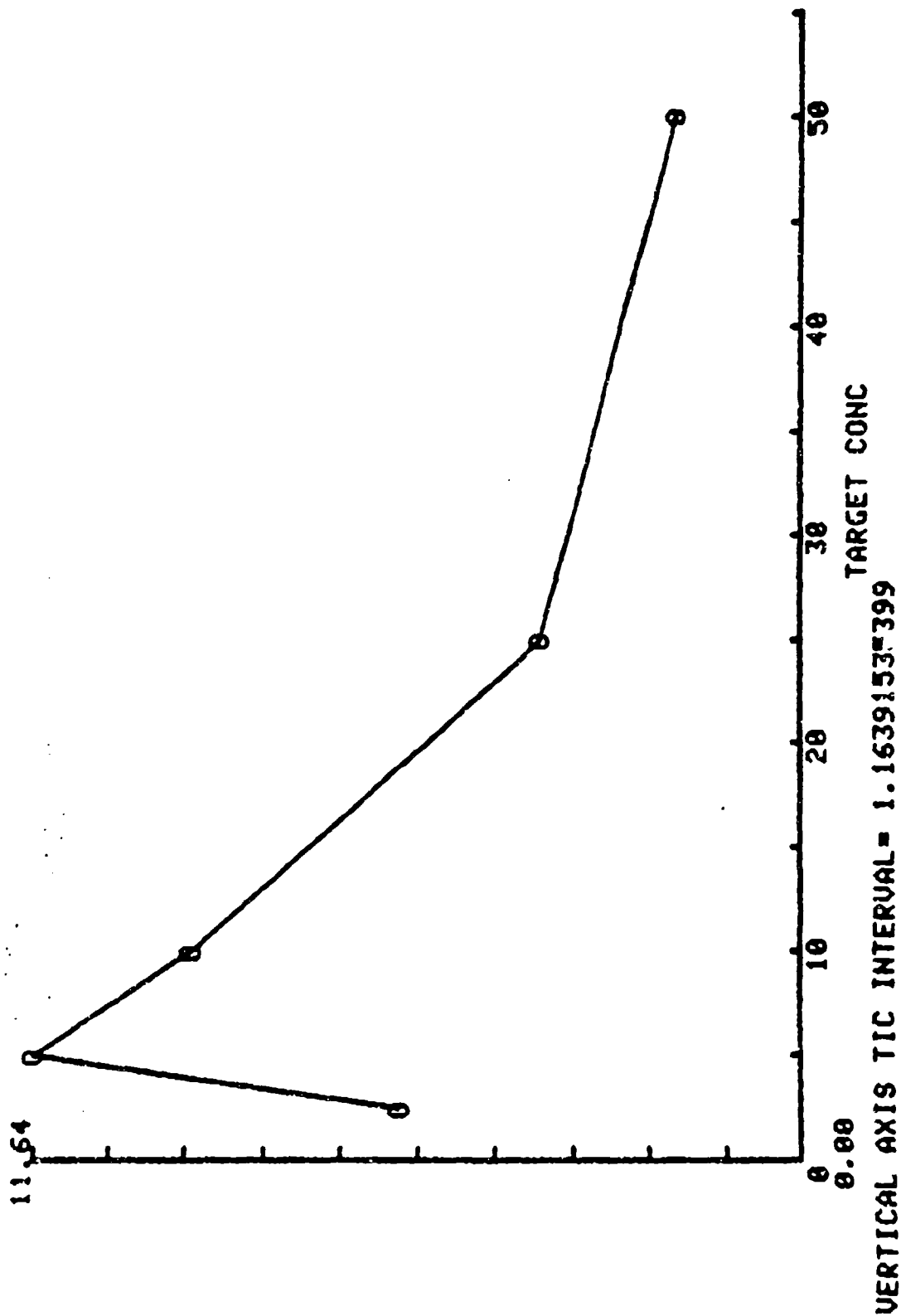
TARGET CONC

Figure II-36.   TNB on Metal - Graph of Imprecision

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Table II-38. TNB on Concrete - Target vs. Found
Concentrations

1,3,5-TRINITROBENZENE (135TNB)
CONCRETE SURFACE
TARGET CONC. vs FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.950
	1.920
	2.090
	1.800
5.000	3.160
	3.510
	5.120
	3.690
10.000	5.880
	7.170
	8.570
	7.620
25.000	20.890
	22.660
	20.540
	17.150
50.000	38.570
	42.370
	44.610
	34.000

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1,3,5-TRINITROBENZENE (135TNB)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 14.1635   SD= 13.7366717317

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.2220282721683
SLOPE= 0.7535930429971
  USE FOR ACCURACY
R= 0.989402029999
MEAN SQR DEV OF POINTS FROM REGRESSION= 4.19942863895
ST ERROR EST= 2.04924879869
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 3.95809784769
x(d)= 9.81755286131

1,3,5-TRINITROBENZENE (135TNB)
CONCRETE SURFACE
FOUND CONC

TARGET CONC

VERTICAL AXIS TIC INTERVAL = 4.237
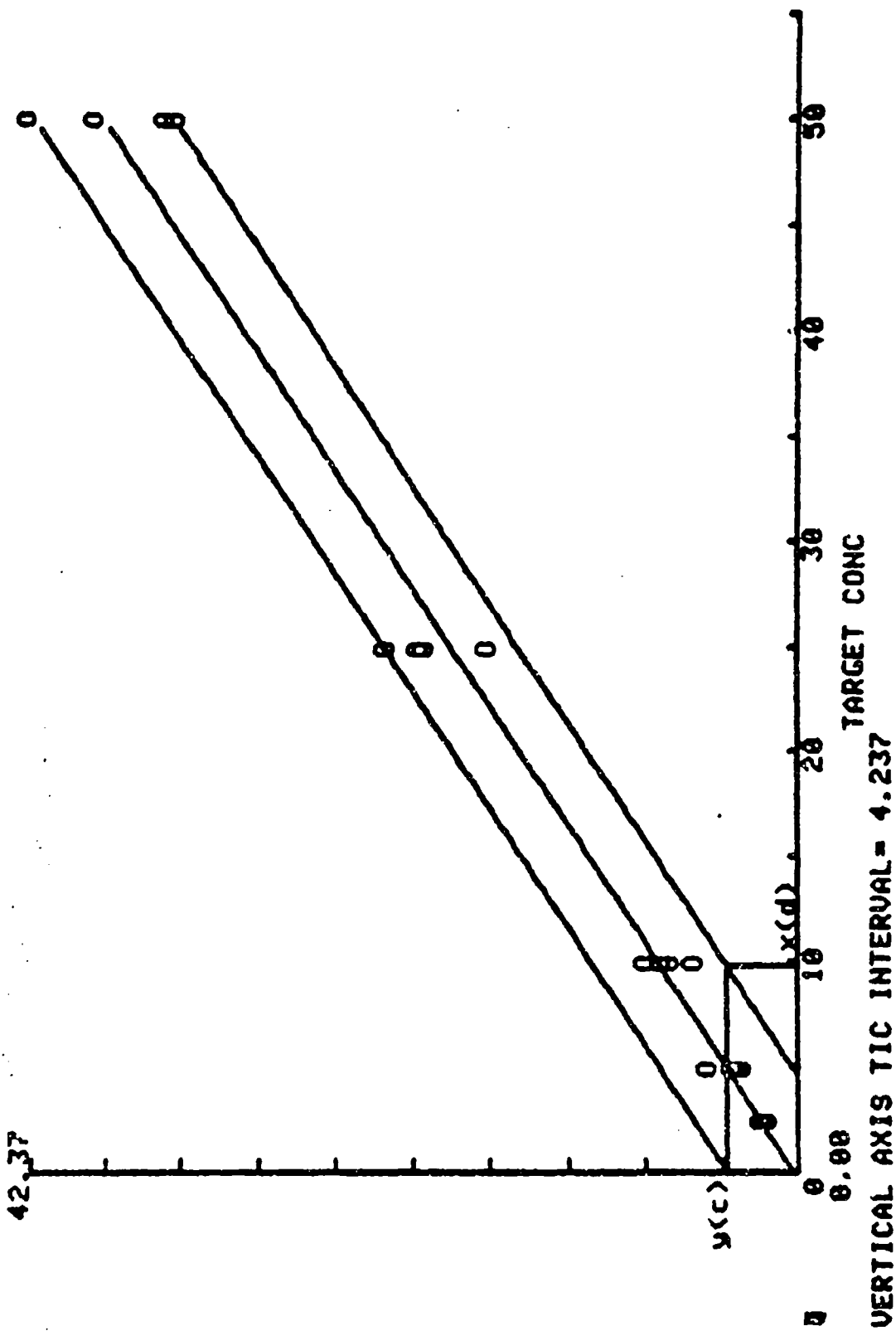
Figure II-37. TNB on Concrete – Graph of Target–Found
Concentration Points

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Table II-40. TNB on Concrete - Inaccuracy and Imprecision Data

1,3,5-TRINITROBENZENE (135TNB)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/18 sq cm	Mn Found Conc ug/18 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.940	0.119	-22.400	6.142
5.000	3.870	0.862	-22.600	22.271
10.000	7.310	1.118	-26.900	15.291
25.000	20.310	2.302	-18.760	11.334
50.000	37.388	3.891	-25.225	10.406
Means		1.658	-23.177	13.089

1,3,5-TRINITROBENZENE (1,3,5TNB)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 0.814

Figure II-38.   TNB on Concrete – Graph of Inaccuracy

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1,3,5-TRINITROBENZENE (135TNB)
CONCRETE SURFACE FOUND CONCENTRATION (REPORT)
IMPRECISION MEAN FOUND CONCENTRATION

VERTICAL AXIS TIC INTERVAL= 2.22712437287
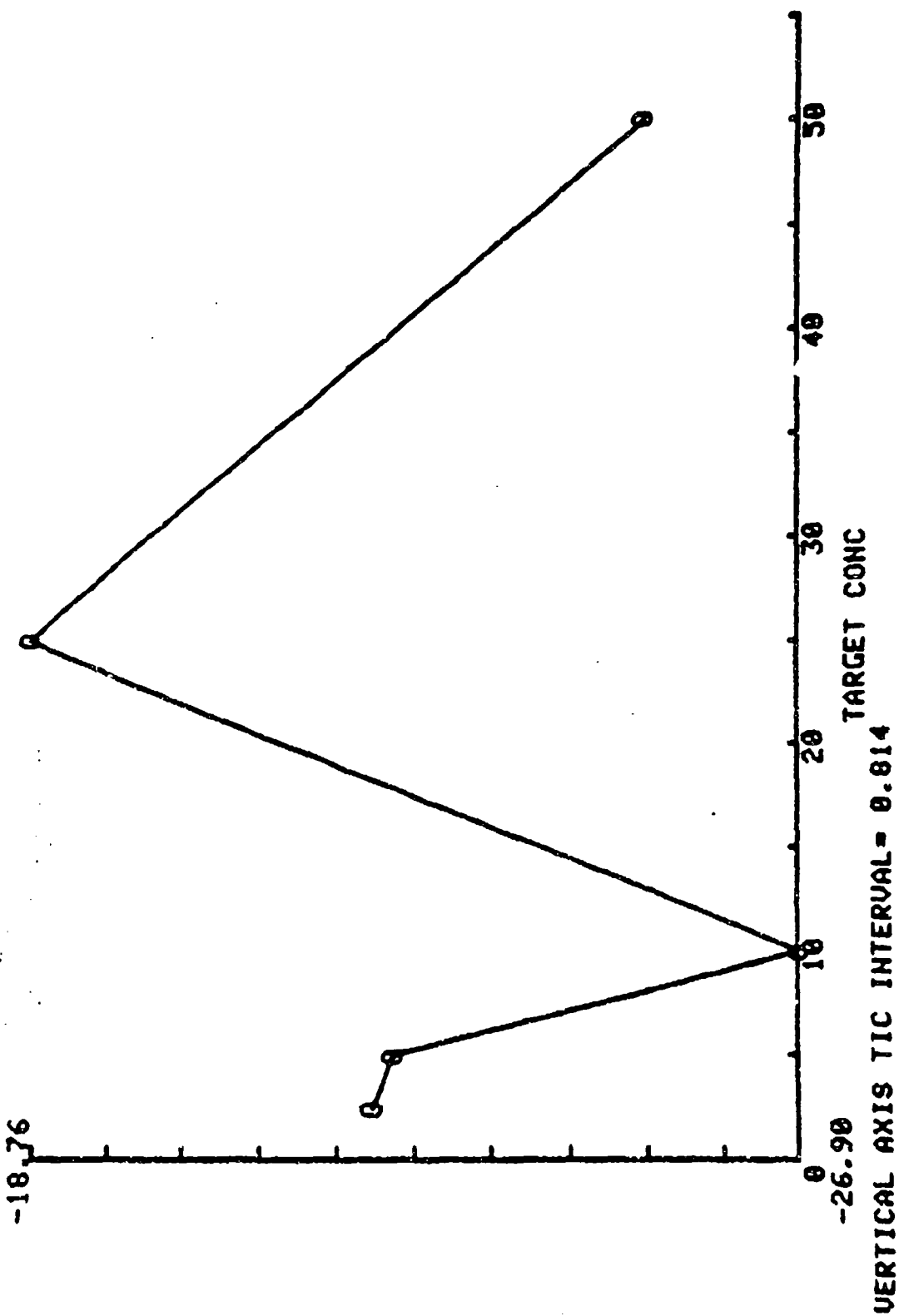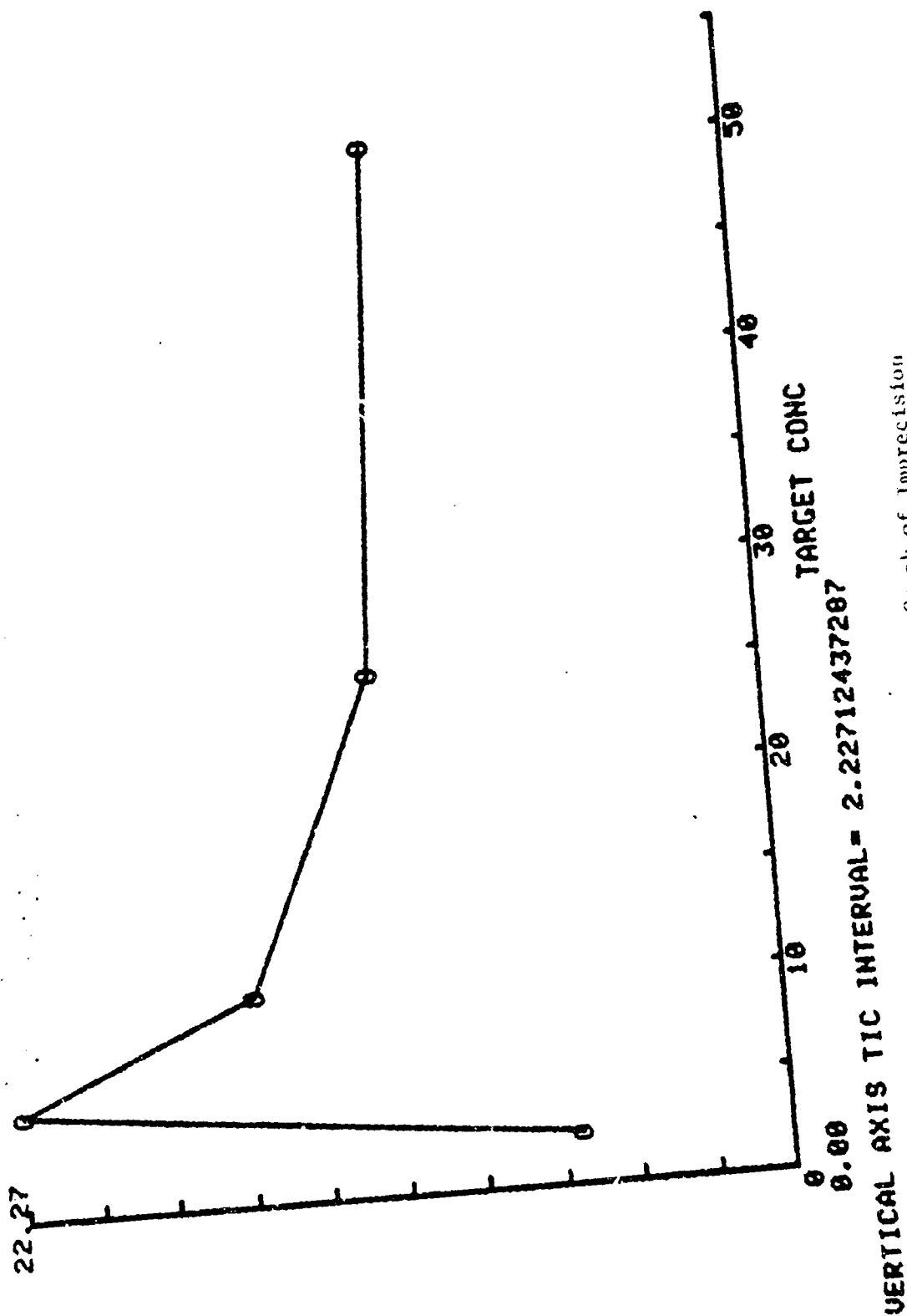
Figure II-39. TNB on Concrete – Graph of Imprecision

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Table II-41. TNB on Brick - Target vs. Found Concentrations

1,3,5-TRINITROBENZENE (135TNB)
BRICK SURFACE
TARGET CONC. VS FOUND CONC.

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.390
	2.100
	1.270
	2.340
5.000	2.000
	6.100
	4.090
	4.950
10.000	8.250
	6.340
	7.600
	9.480
25.000	22.460
	14.690
	12.960
	21.150
50.000	39.220
	43.160
	23.840
	43.340

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Table II-42. TNB on Brick – Analysis of Target-Found (Concentration Points)

```
1,3,5-TRINITROBENZENE (135TNB)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.8350535872

FOUND CONC
MEAN= 13.8845  SD= 13.9256762802

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.2729753323625
SLOPE= 0.735758090615
  USE FOR ACCURACY
R= 0.9528755566024
MEAN S2R DEV OF POINTS FROM REGRESSION= 18.8379829636
ST ERROR EST= 4.3482745263
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 8.18590696298
x(d)= 21.2428137955
```

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1,3,5-TRINITROBENZENE (135TNB)
BRICK SURFACE
FOUND CONC

43.34

y(c)

0.00

0   x(d)

20   30   40   50

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 4.334

Figure II-40.   TNB on Brick - Graph of Target-Found
Concentration Points

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Table II-43. TNB on Brick - Inaccuracy and Imprecision Data

1,3,5-TRINITROBENZENE (135TNB)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.795	0.543	-28.200	30.257
5.000	4.505	1.424	-9.900	31.600
10.000	7.918	1.309	-20.825	16.534
25.000	17.815	4.692	-28.740	26.335
50.000	37.390	9.231	-25.220	24.689
Means		3.440	-22.577	25.885

1,3,5-TRINITROBENZENE (135TNB)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.884

TARGET CONC
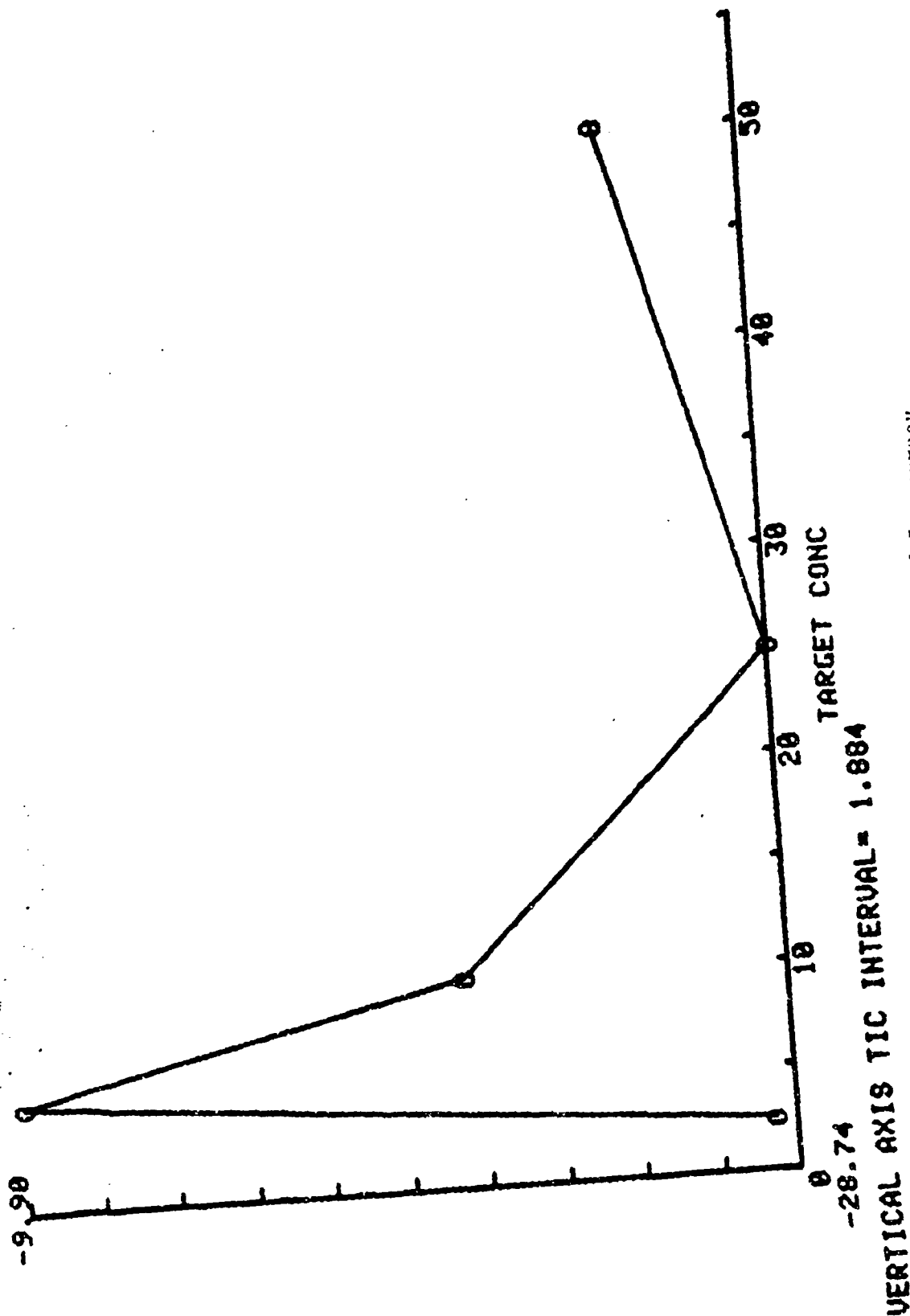
Figure II-41. TNB on Brick - Graph of Inaccuracy

Arthur D. Little, Inc.
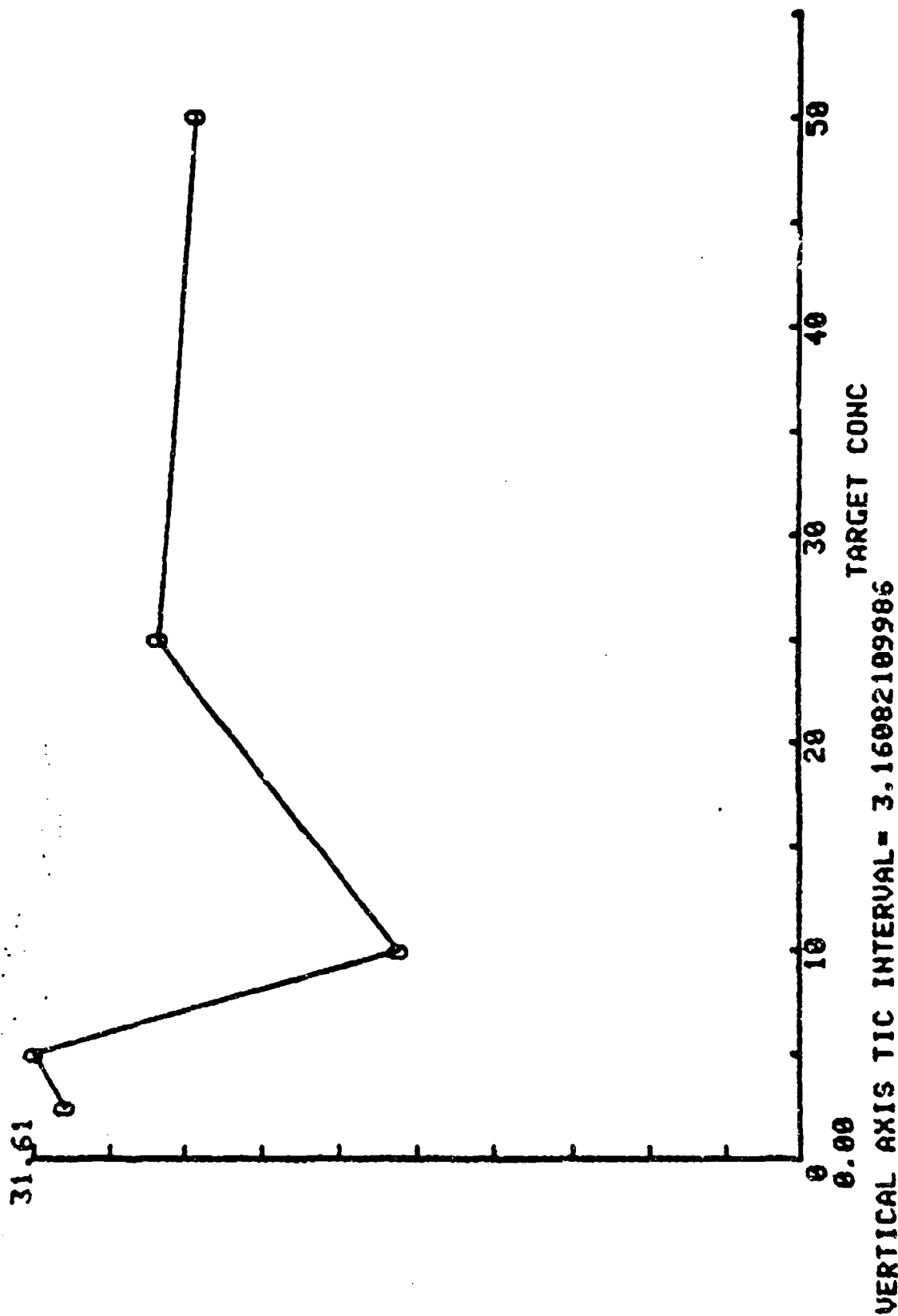
Figure II-42. TNB on Brick – Graph of Imprecision

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Table II-44. TNB on Transite - Target vs. Found
Concentrations

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.860 2.050 1.780 1.540
5.000	1.600 3.760 4.620 3.730
10.000	3.270 8.230 8.220 8.140
25.000	6.990 17.090 20.220 18.330
50.000	12.180 33.330 34.930 39.400

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Table II-45. TNB on Transite – Analysis of Target-Found Concentration Points

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 11.5135   SD= 12.0108847849

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.555752427104
SLOPE= 0.592310679612
   USE FOR ACCURACY
R= 0.889392237864
MEAN SQR DEV OF POINTS FROM REGRESSION= 31.8226365831
ST ERROR EST= 5.64115560706
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 10.8403673461
x(d)= 34.6225232479

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Figure 11-43. TNB on Transite – Graph of Target-Found
Concentration Points

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Table II-46. TNB on Transite - Inaccuracy and
Imprecision Data

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.558	0.510	-37.700	32.715
5.000	3.428	1.286	-31.450	37.529
10.000	6.965	2.464	-30.350	35.372
25.000	15.658	5.920	-37.370	37.889
50.000	29.960	12.128	-40.080	40.482
Means		4.462	-35.390	36.781

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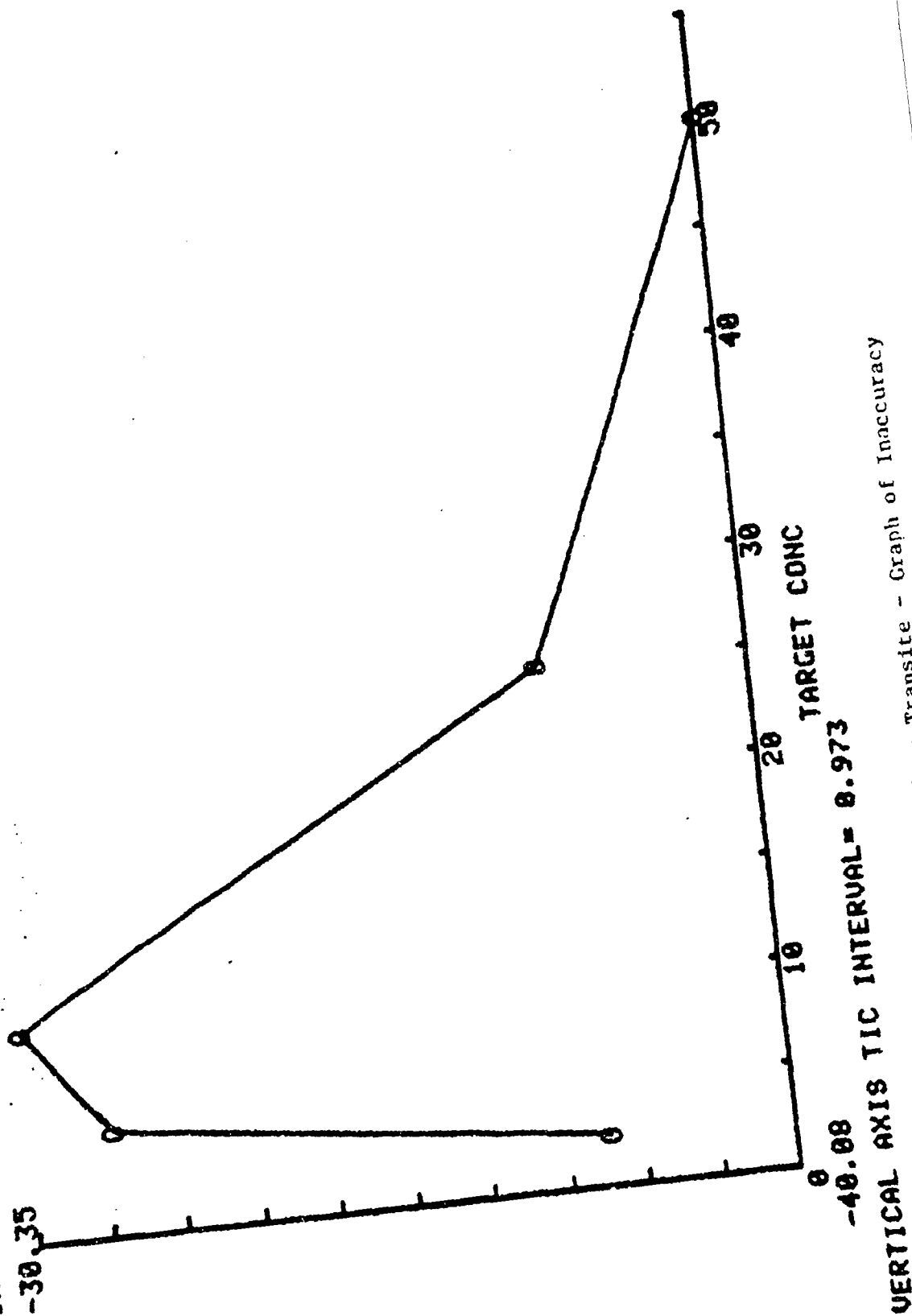
Figure II-44. TNB on Transite – Graph of Inaccuracy

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1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 4.0492230B868
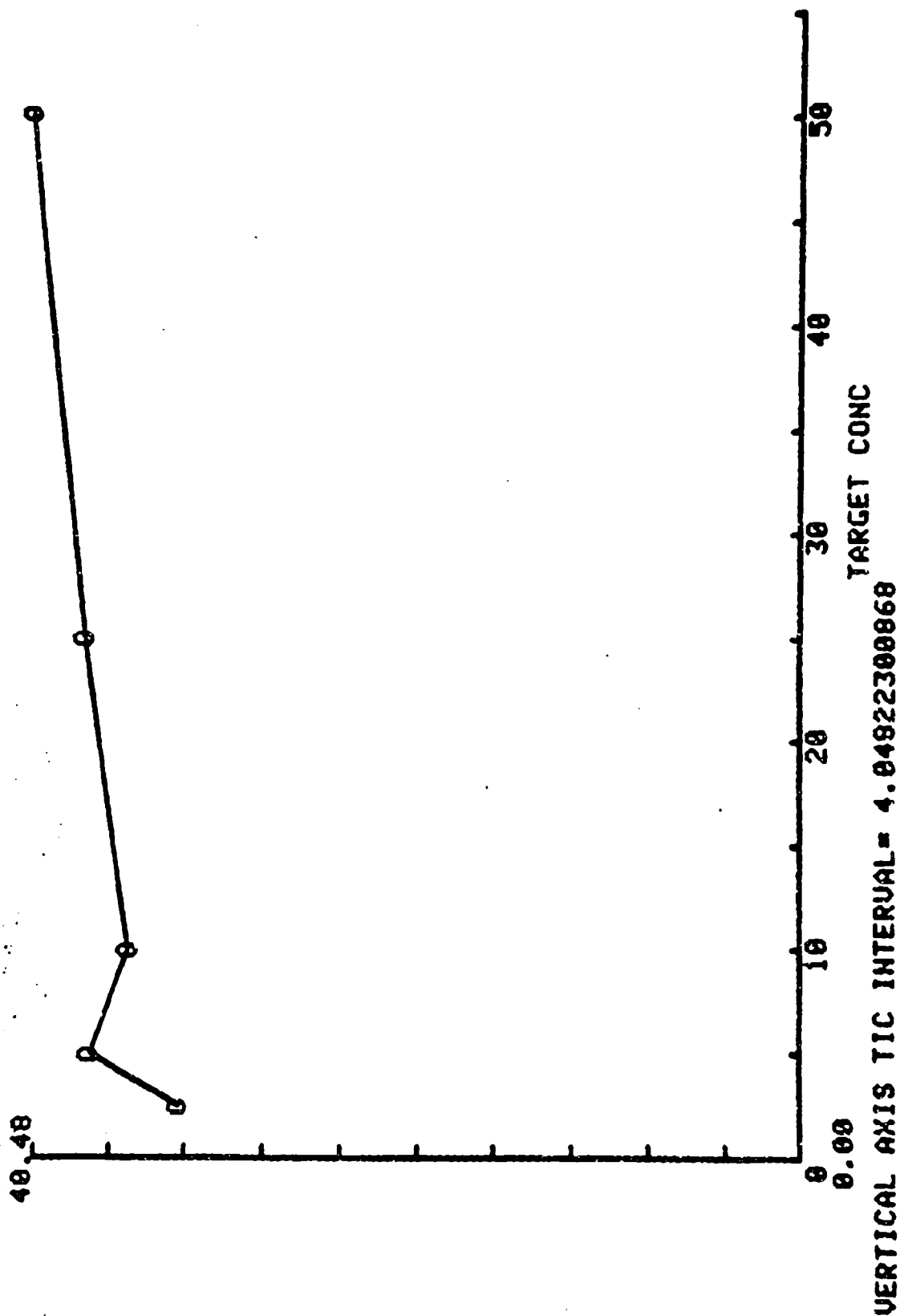
TARGET CONC

Figure II-45. TNB on Transite – Graph of Imprecision

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Table II-47. TNB on Transite (3 days) – Target vs.
Found Concentrations

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.050
	1.780
	1.540
5.000	3.760
	4.620
	3.730
10.000	8.230
	8.220
	8.140
25.000	17.090
	20.220
	18.330
50.000	33.330
	34.930
	39.400

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Table II-48. TNB on Transite (3 days) - Analysis
of Target-Found Concentration Points

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 13.6913333333   SD= 13.6087014102

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.541645091694
SLOPE= 0.710793959008
  USE FOR ACCURACY
R= 0.994192846865
MEAN SQR DEV OF POINTS FROM REGRESSION= 2.11048858187
ST ERROR EST= 1.45275207171
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 3.28917417064
x(d)= 7.64791513283

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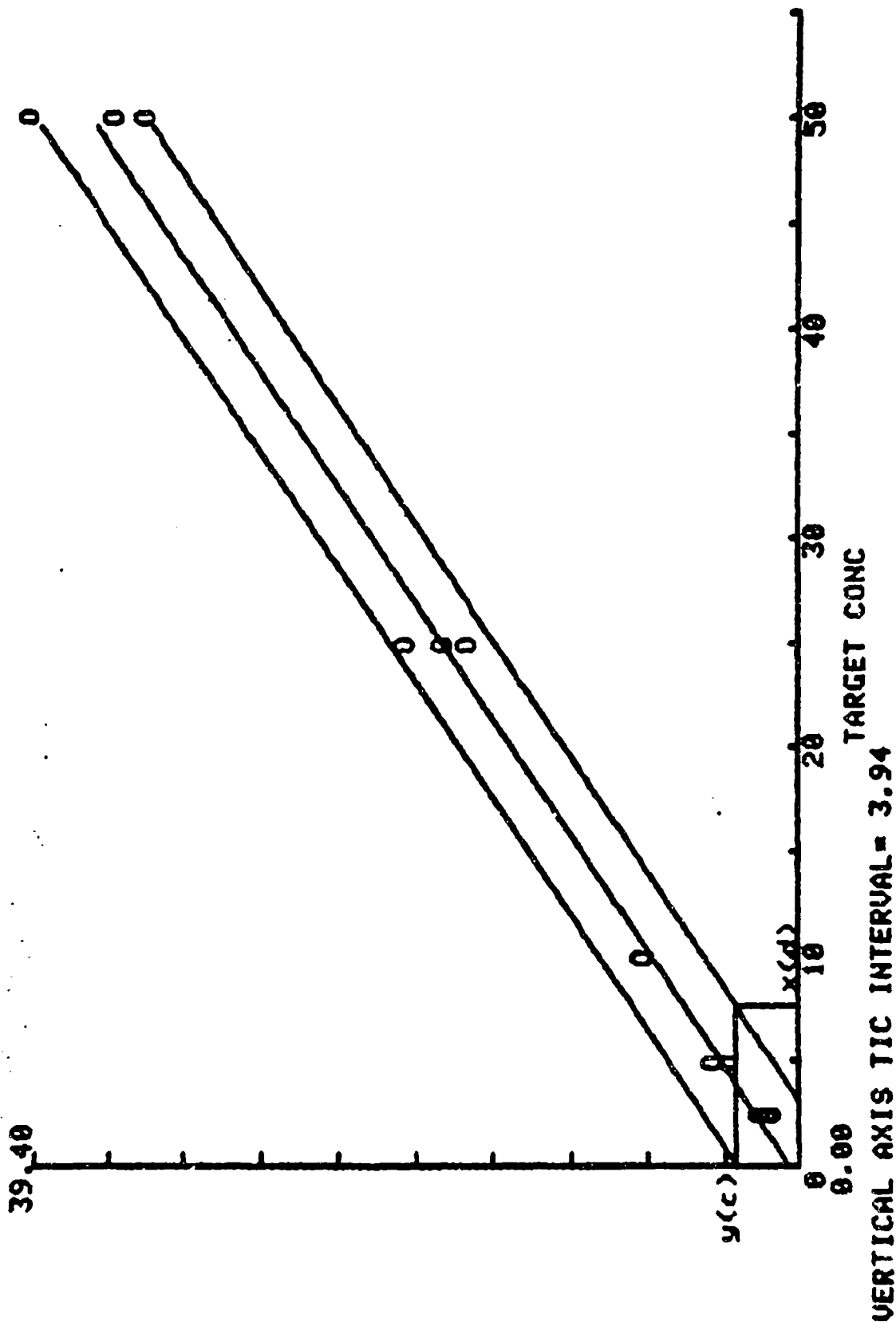
Figure II-46. TNB on Transite (3 days) — Graph of Target-Found Concentration Points

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Table II-49. TNB on Transite (3 days) - Inaccuracy and Imprecision Data

1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.790	0.255	-28.400	14.254
5.000	4.037	0.505	-19.267	12.520
10.000	8.197	0.849	-18.033	8.602
25.000	18.547	1.576	-25.813	8.499
50.000	35.887	3.146	-28.227	8.767
Means		1.106	-23.948	8.928

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1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE MEAN FOUND CONCENTRATION (REPORT)
MEAN INACCURACY
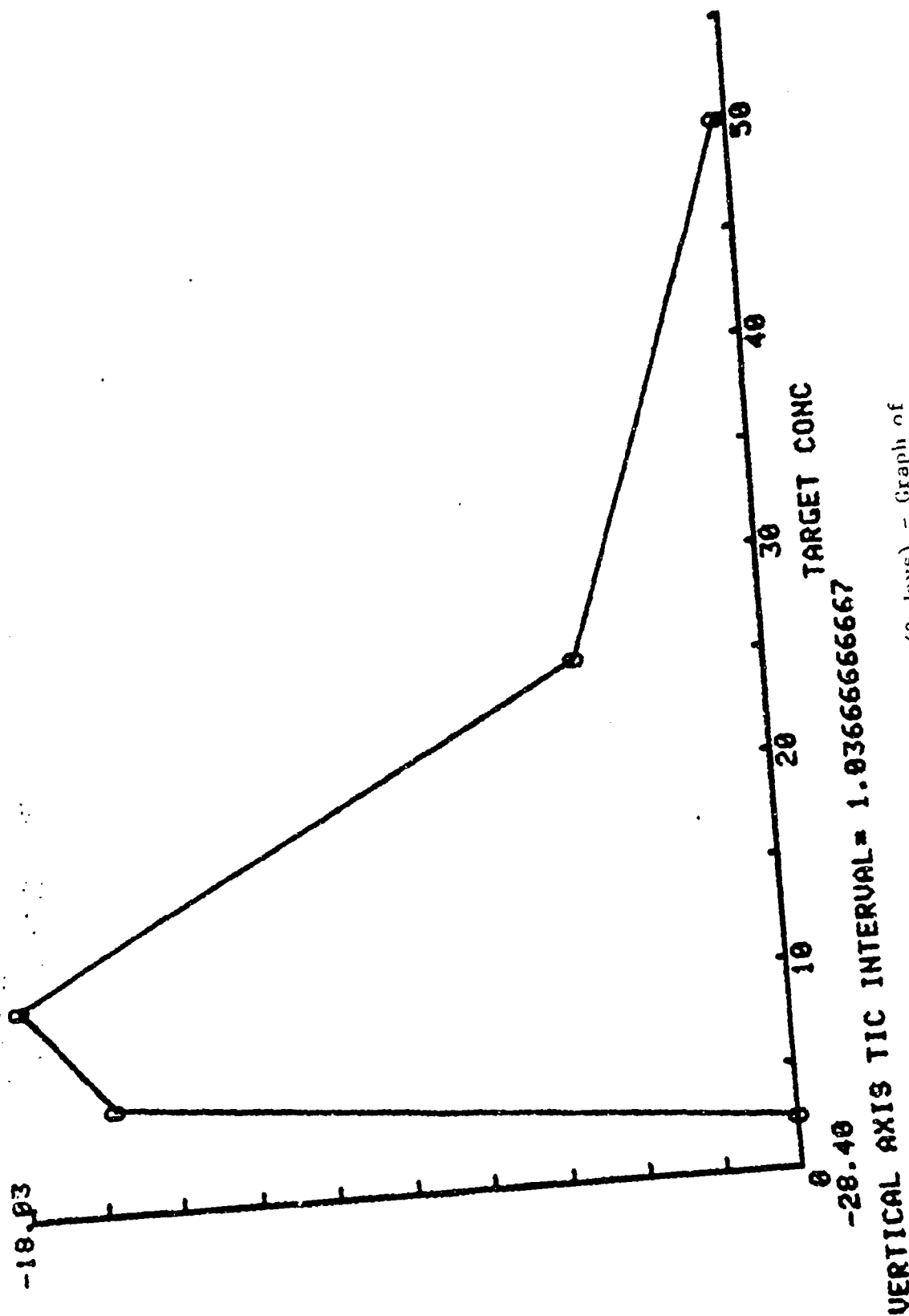
VERTICAL AXIS TIC INTERVAL= 1.83666666667

Figure II-47. TNB on Transite (3 days) - Graph of Inaccuracy

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1,3,5-TRINITROBENZENE (135TNB)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.4254823265
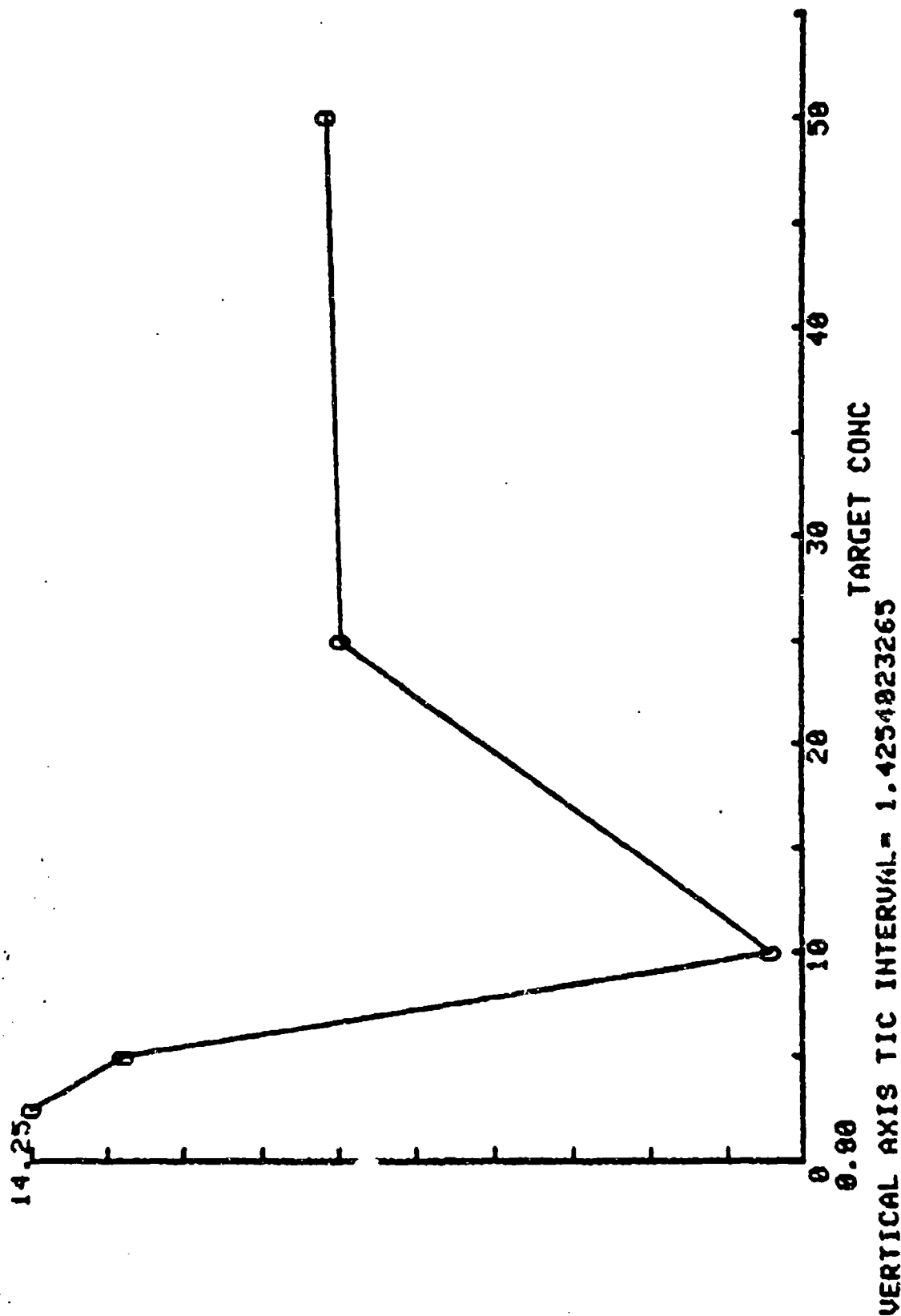
TARGET CONC

Figure II-48. TNB on Transite - Graph of Imprecision

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Table II-50. 2,4-DNT on Metal – Target vs. Found
Concentrations

2,4-DINITROTOLUENE (24DNT)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.120
	2.300
	2.480
	2.070
5.000	3.710
	4.370
	4.170
	4.840
10.000	9.020
	8.720
	10.040
	11.180
25.000	21.060
	20.820
	25.960
	21.740
50.000	39.160
	38.400
	45.230
	46.510

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2,4-DINITROTOLUENE (24DNT)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5 SD= 18.0350535872

FOUND CONC
MEAN= 16.192 SD= 15.3408483262

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.5974130258 9
SLOPE= 0.8429508647249
  USE FOR ACCURACY
R= 0.9909921388 47
MEAN SQR DEV OF POINTS FROM REGRESSION= 4.45523971932
ST ERROR EST= 2.11974387819
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7340689648 0
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 4.4455963412 8
x(d)= 9.0449892348 6

155

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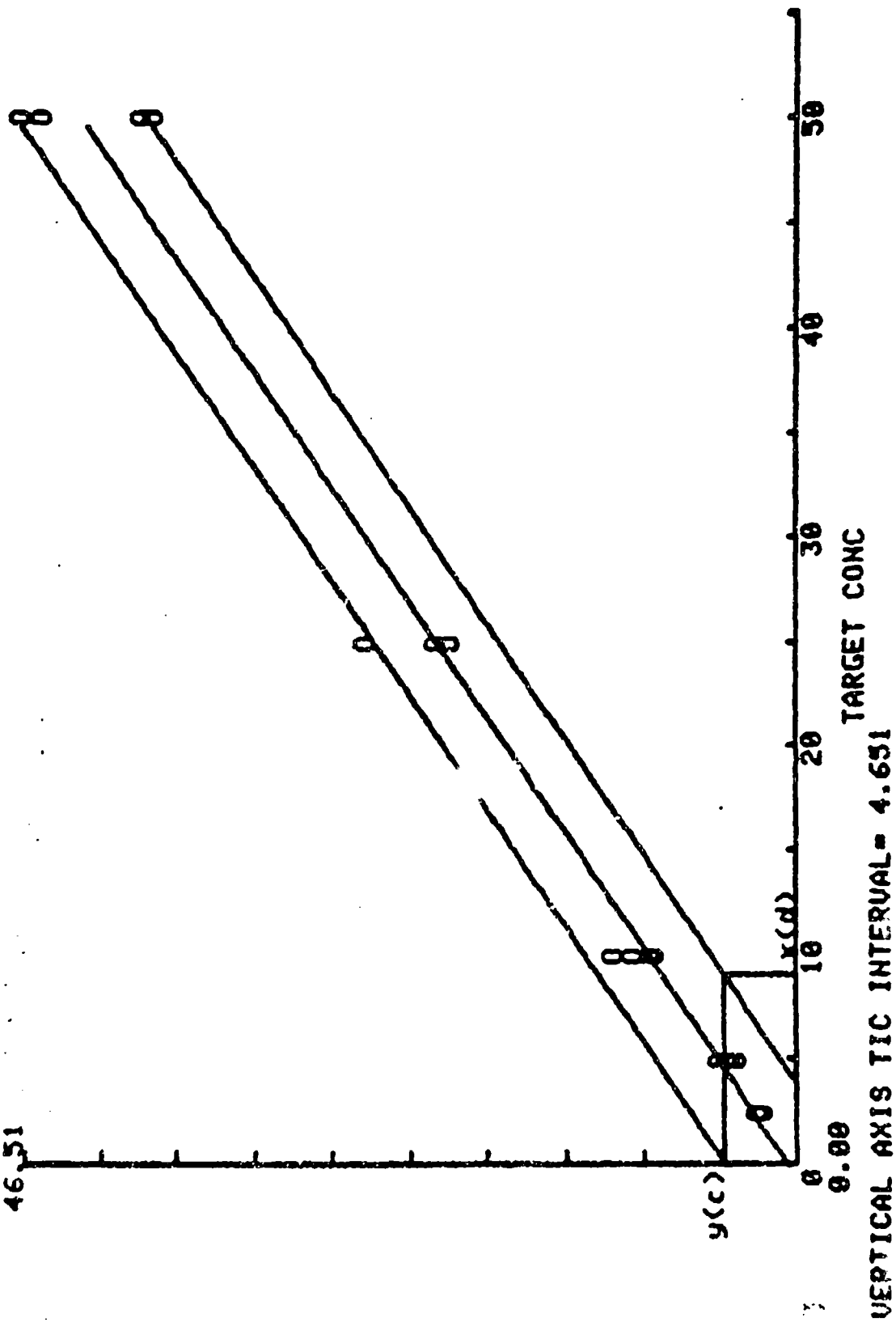
Figure II-49. 2,4-DNT on Metal – Graph of Target-Found
Concentration Points

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Table II-52. 2,4-DNT on Metal – Inaccuracy and
Imprecision Data

2,4-DINITROTOLUENE (24DNT)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.243	0.187	-10.300	8.322
5.000	4.273	0.468	-14.550	10.965
10.000	9.740	1.114	-2.600	11.436
25.000	22.380	2.420	-10.480	10.812
50.000	42.325	4.138	-15.350	9.777
Means		1.665	-10.656	10.263

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2,4-DINITROTOLUENE (24DNT)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.275

Figure II-50. 2,4-DNT on Metal - Graph of Inaccuracy

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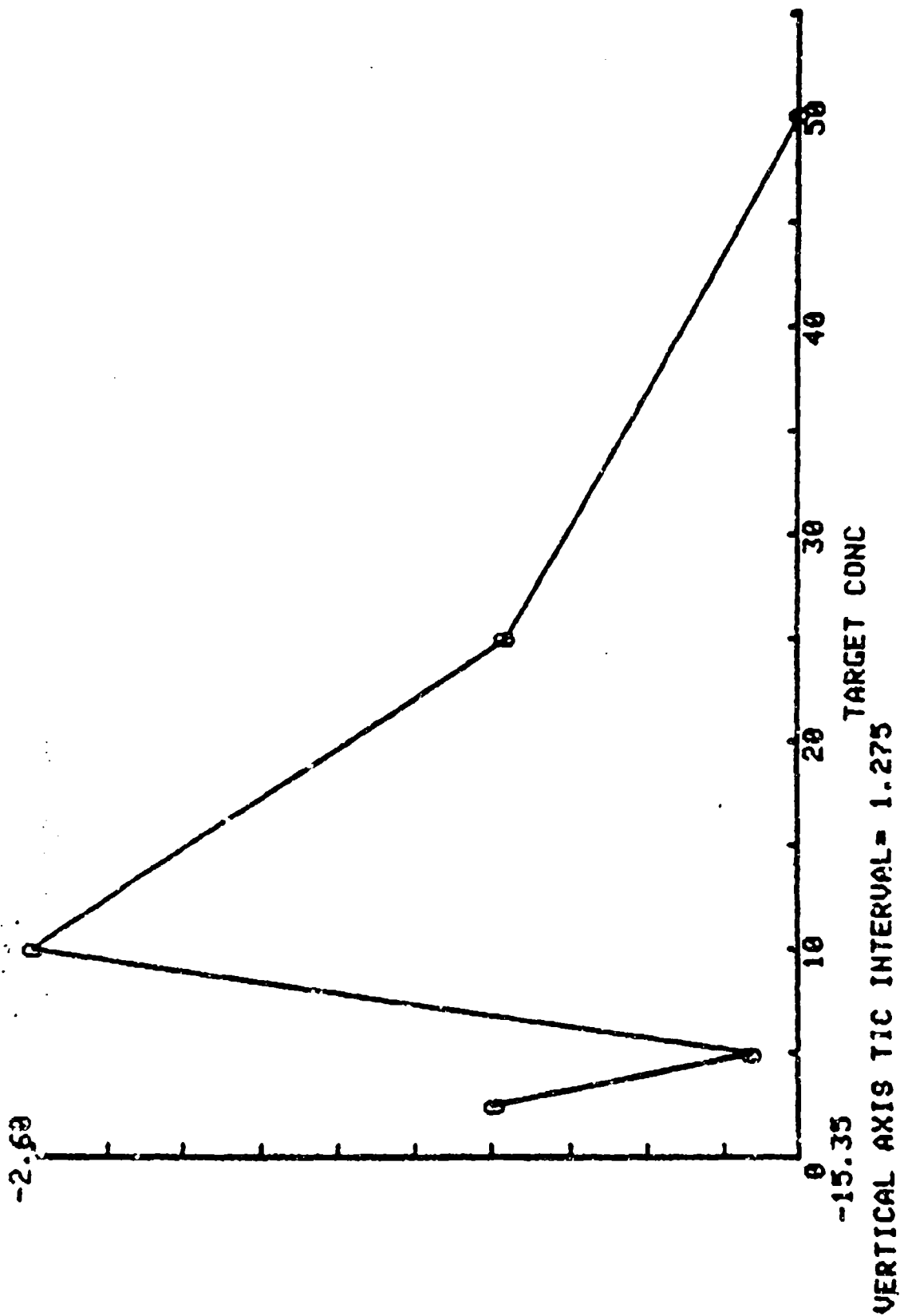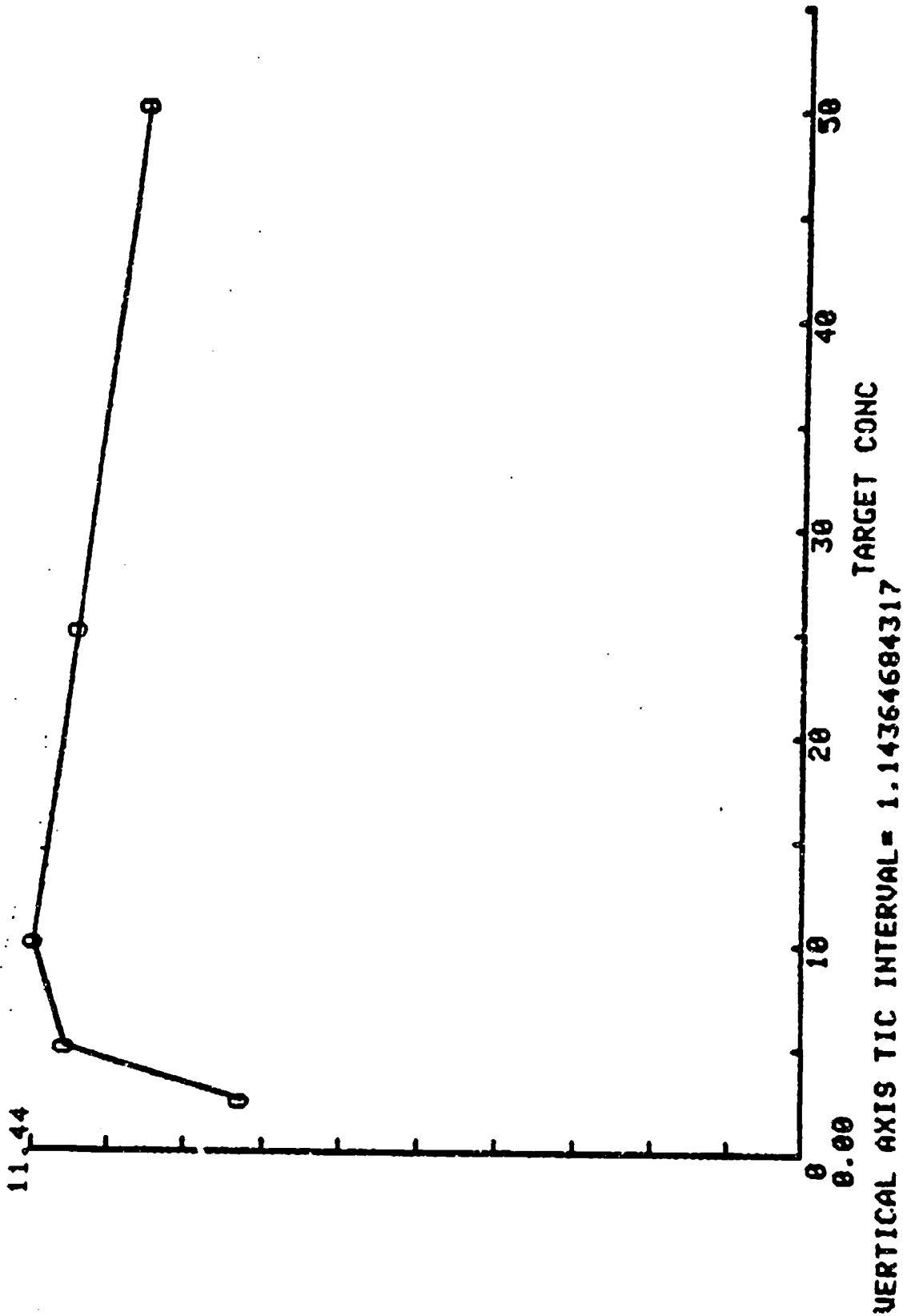
Figure II-51. 2,4-DNT on Metal – Graph of Imprecision

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Table II-53. 2,4-DNT on Concrete - Target vs. Found Concentrations

2,4-DINITROTOLUENE (24DNT)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.530
	2.140
	2.100
	2.090
5.000	4.340
	4.510
	4.140
	3.830
10.000	6.310
	8.360
	7.890
	8.160
25.000	23.120
	20.680
	22.670
	17.900
50.000	33.880
	41.990
	44.240
	36.070

2,4-DINITROTOLUENE (24DNT)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 14.8475 SD= 14.301442281

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.36443972491
SLOPE= 0.78286812297
  USE FOR ACCURACY
R= 0.98724787879
MEAN SQR DEV OF POINTS FROM REGRESSION= 5.4711076400
ST ERROR EST= 2.33903989706
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
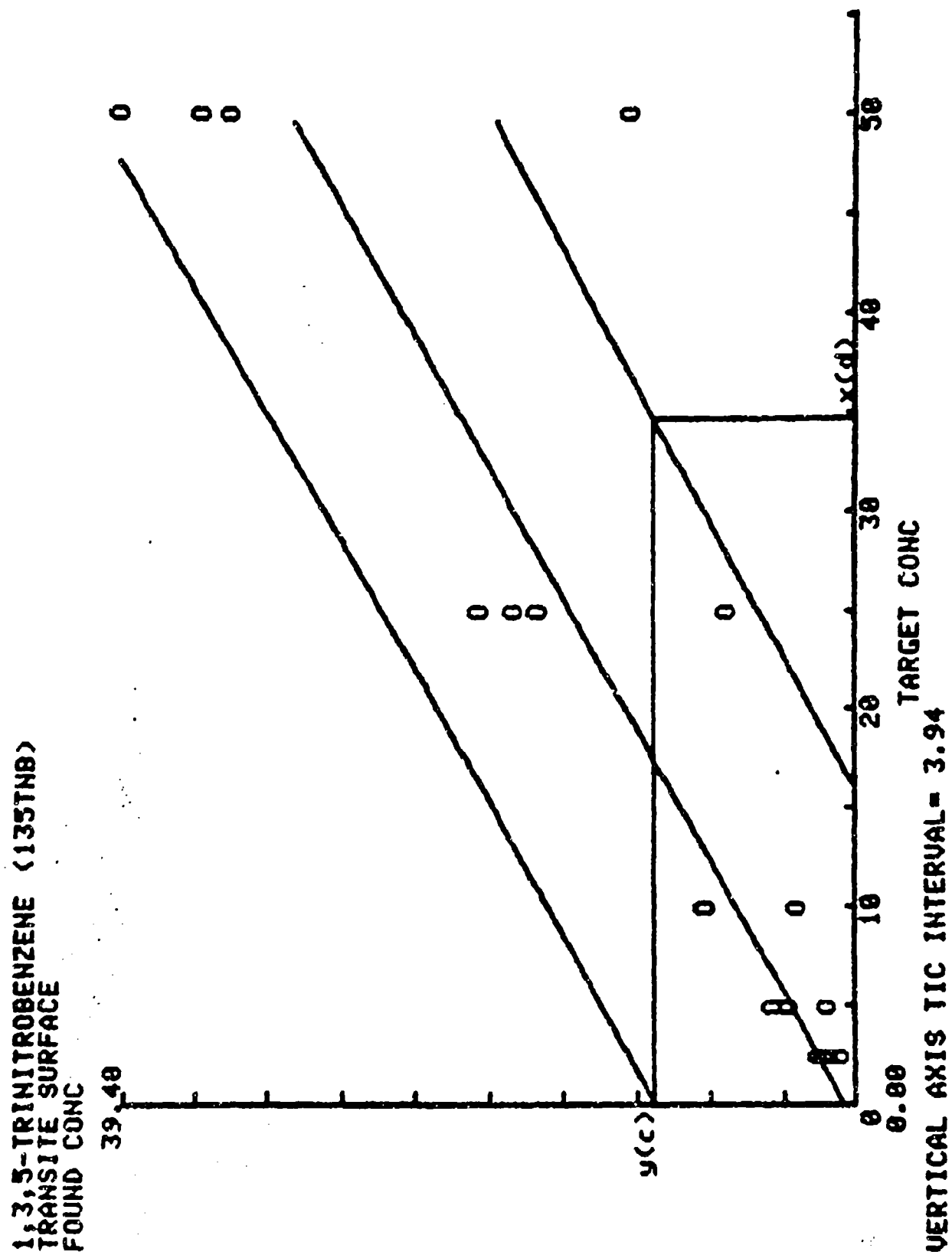X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 4.62883883032
x(d)= 10.7804175652

Figure II-52. 2,4-DNT on Concrete – Graph of Target–Found Concentration Points

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Table II-55. 2,4-DNT on Concrete – Inaccuracy and
Imprecision Data

2,4-DINITROTOLUENE (24DNT)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.215	0.211	-11.400	9.531
5.000	4.205	0.292	-15.900	6.948
10.000	7.680	0.933	-23.200	12.154
25.000	21.093	2.378	-15.630	11.273
50.000	39.045	4.871	-21.910	12.476
Means		1.737	-17.600	10.476

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2,4-DINITROTOLUENE (24DNT)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.18

TARGET CONC

Figure II-53. 2,4-DNT on Concrete — Graph of Inaccuracy

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2,4-DINITROTOLUENE (24DNT)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.24761356085
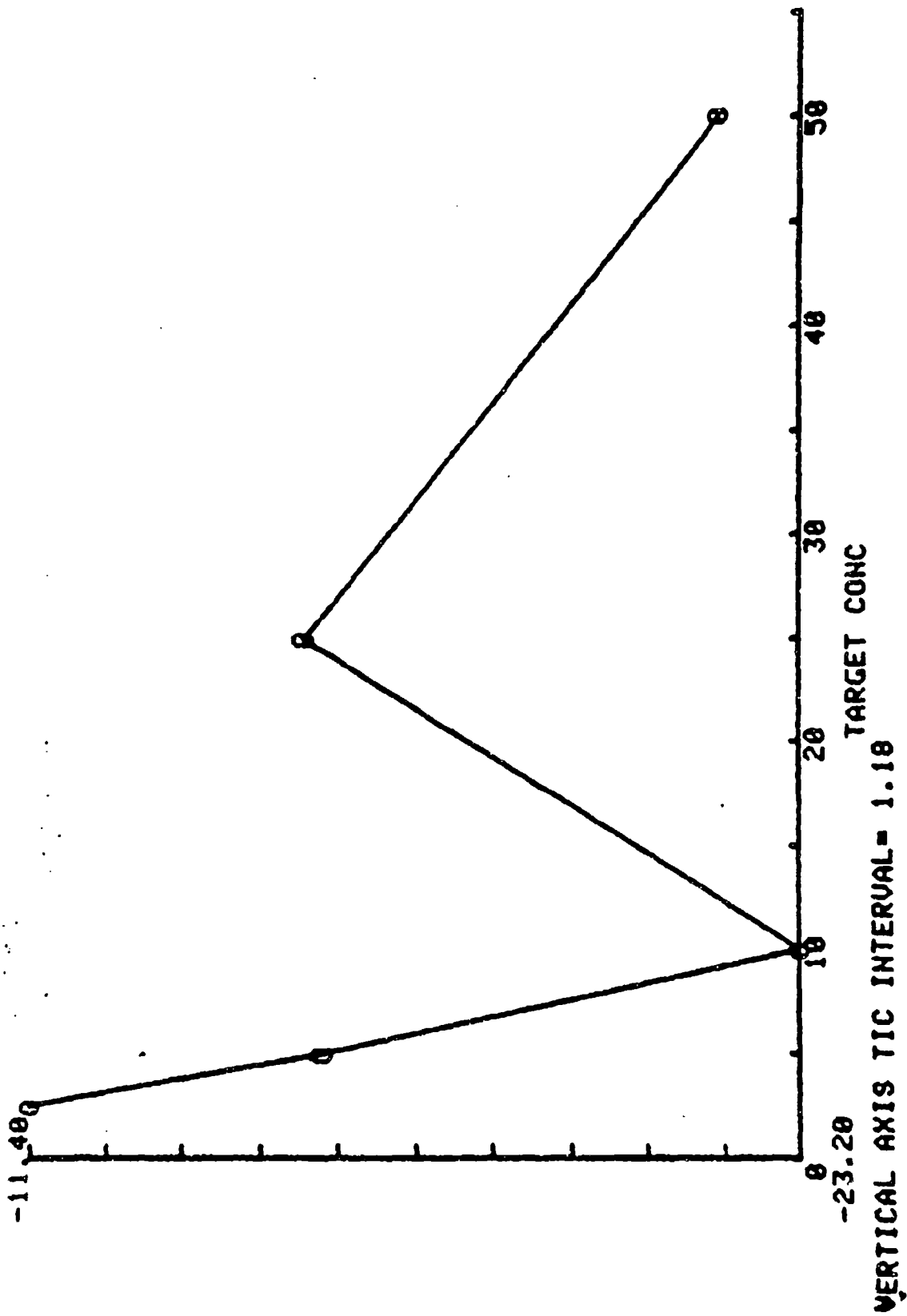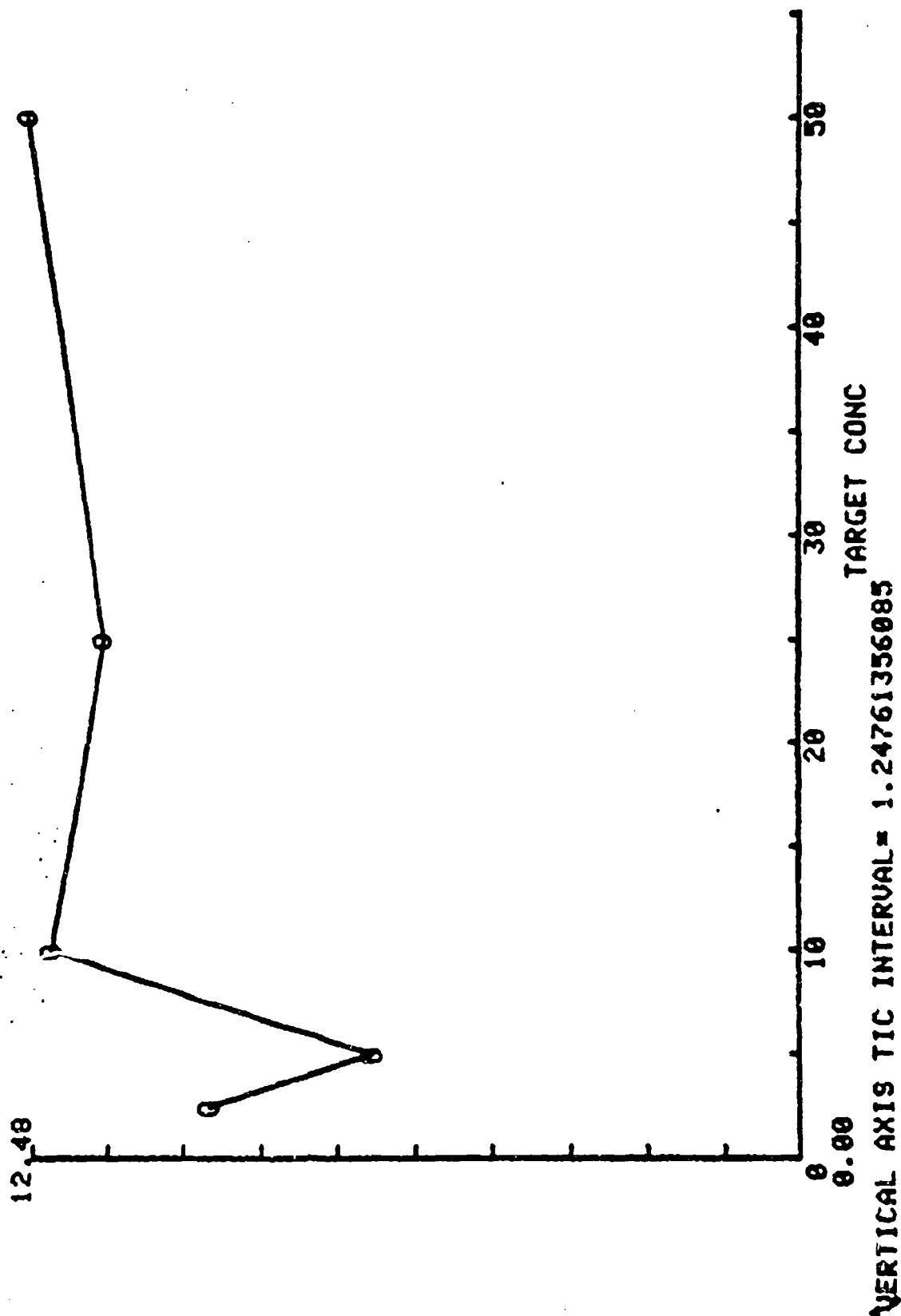
TARGET CONC

Figure II-54. 2,4-DNT on Concrete - Graph of Imprecision

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Table II-56. 2,4-DNT on Brick – Target vs. Found Concentrations

2,4-DINITROTOLUENE (24DNT)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.530
	2.270
	1.040
	1.780
5.000	2.410
	5.420
	4.160
	4.740
10.000	7.570
	6.300
	7.420
	9.830
25.000	22.860
	14.260
	13.890
	20.880
50.000	37.560
	37.440
	22.770
	42.410

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2,4-DINITROTOLUENE (24DNT)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5 SD= 18.0350535872

FOUND CONC
MEAN= 13.327 SD= 13.1141246071

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.4947653721568
SLOPE= 0.6936343804207
  USE FOR ACCURACY
R= 0.9539128239867
MEAN SQR DEV OF POINTS FROM REGRESSION= 16.347255196
ST ERROR EST= 4.04317398128
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 7.86604073574
x(d)= 20.9893981903

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Figure II-55. 2,4-DNT on Brick — Graph of Target-Found Concentration Points

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Table II-58. 2,4-DNT on Brick – Inaccuracy and Imprecision Data

2,4-DINITROTOLUENE (24DNT)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.655	0.512	-33.800	30.961
5.000	4.183	1.289	-16.350	30.819
10.000	7.780	1.479	-22.200	19.016
25.000	17.973	4.575	-28.110	25.455
50.000	35.845	8.505	-29.910	24.267
Means		3.272	-26.074	26.104

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2,4-DINITROTOLUENE (24DNT)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.745
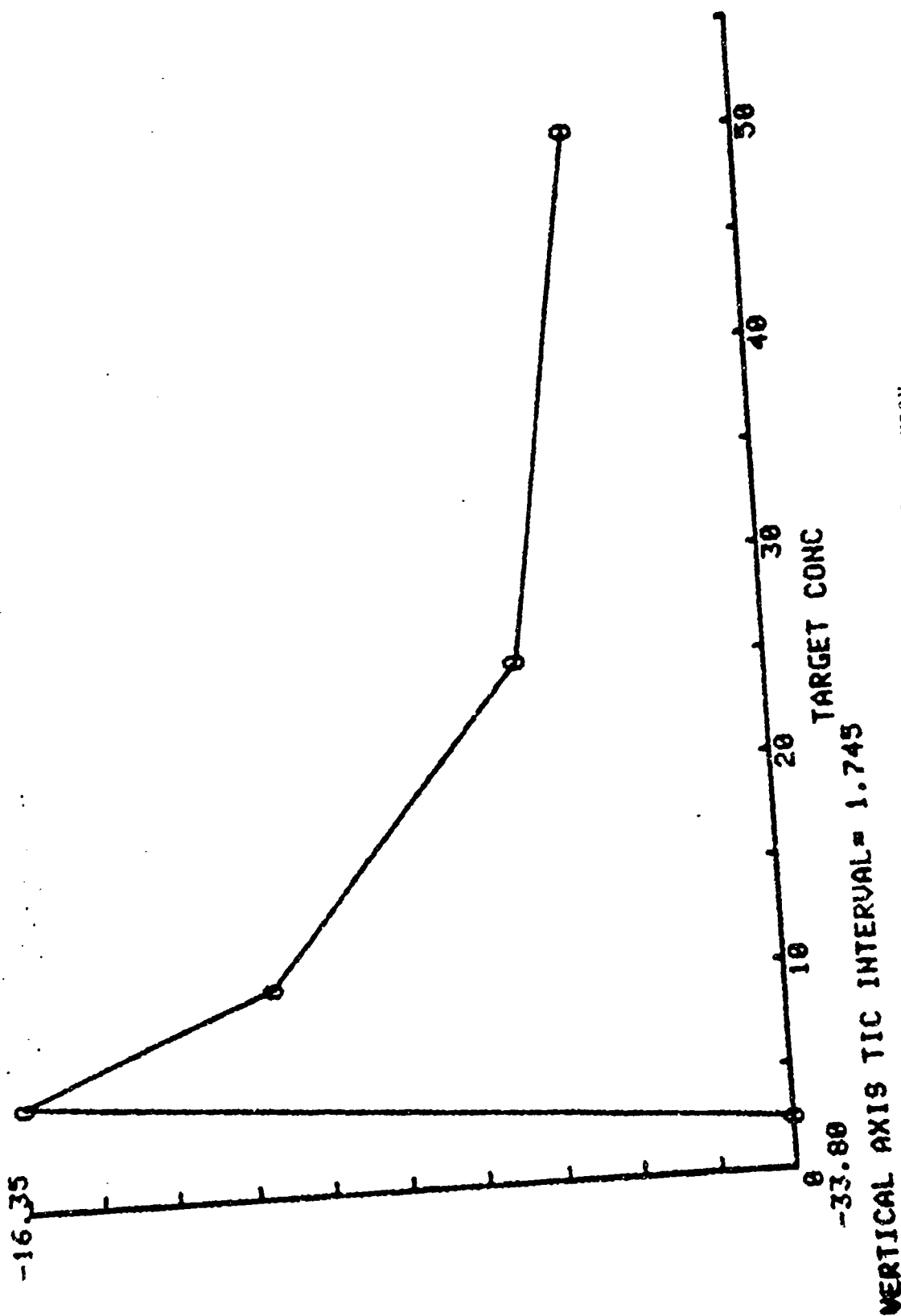
Figure II-56. 2,4-DNT on Brick – Graph of Inaccuracy

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Figure II-57. 2,4-DNT on Brick – Graph of Imprecision

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Table II-59. 2,4-DNT on Transite – Target vs. Found Concentrations

2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.700
	2.220
	2.840
	1.660
5.000	1.540
	3.940
	4.250
	3.050
10.000	2.850
	7.620
	7.190
	8.020
25.000	7.950
	16.380
	18.930
	21.220
50.000	11.620
	37.580
	39.370
	41.520

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2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 11.9825   SD= 13.2377478109

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.05215412621.34
SLOPE= 0.650521844.66
   USE FOR ACCURACY
R= 0.886268386037
MEAN SQR DEV OF POINTS FROM REGRESSION= 39.6820662251
ST ERROR EST= 6.29937030385
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096498
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 11.4324849867
x(d)= 35.22846123.74

Figure II-58. 2,4-DNT on Transite – Graph of Target-Found Concentration Points

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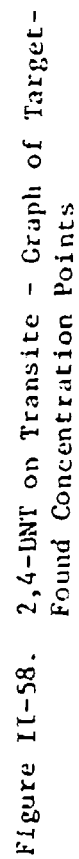
Table II-61. 2,4-DNT on Transite – Inaccuracy and
Imprecision Data

2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con	Mn Found Conc	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.655	0.678	-33.800	48.973
5.000	3.195	1.215	-36.100	38.026
10.000	6.4??	2.484	-35.800	37.446
25.000	16.120	5.794	-35.520	35.945
50.000	32.523	14.028	-34.955	43.133
Means		4.824	-35.235	39.104

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Figure II-59. 2,4-DNT on Transite – Graph of Inaccuracy

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2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL = 4.31325477724

TARGET CONC

Figure 11-60. 2,4-DNT on Transite - Graph of Imprecision

2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.220
	2.040
	1.660
5.000	3.940
	4.250
	3.050
10.000	7.620
	7.190
	8.020
25.000	16.380
	18.930
	21.220
50.000	37.580
	39.370
	41.520

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2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 14.3326666667   SD= 14.4185805061

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.2706984899752
SLOPE= 0.789371089536
USE FOR ACCURACY
R= 0.996138122967
MEAN SQR DEV OF POINTS FROM REGRESSION= 1.72591231227
ST ERROR EST= 1.31373981989
USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 2.21392254463
x(d)= 6.23754930521

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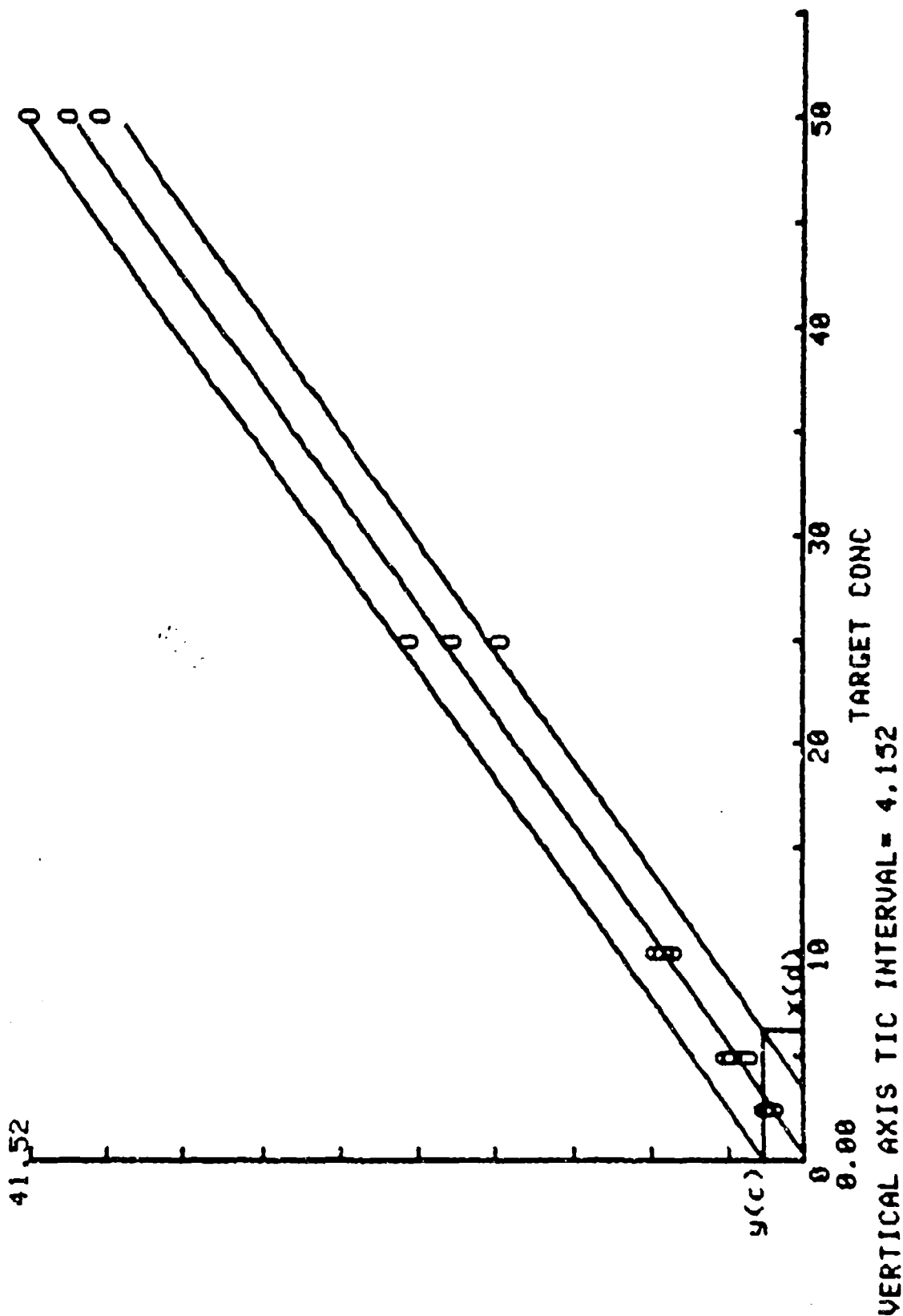
Figure 11-61. 2,4-DNT on Transite (3 days) - Graph of Target-Found Concentration Points.

2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.973	0.286	-21.067	14.488
5.000	3.747	0.623	-25.067	16.626
10.000	7.610	0.415	-23.900	5.455
25.000	18.843	2.421	-24.627	12.849
50.000	39.490	1.973	-21.020	4.996
Means		1.144	-23.136	10.883

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2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 0.4046666667 TARGET CONC
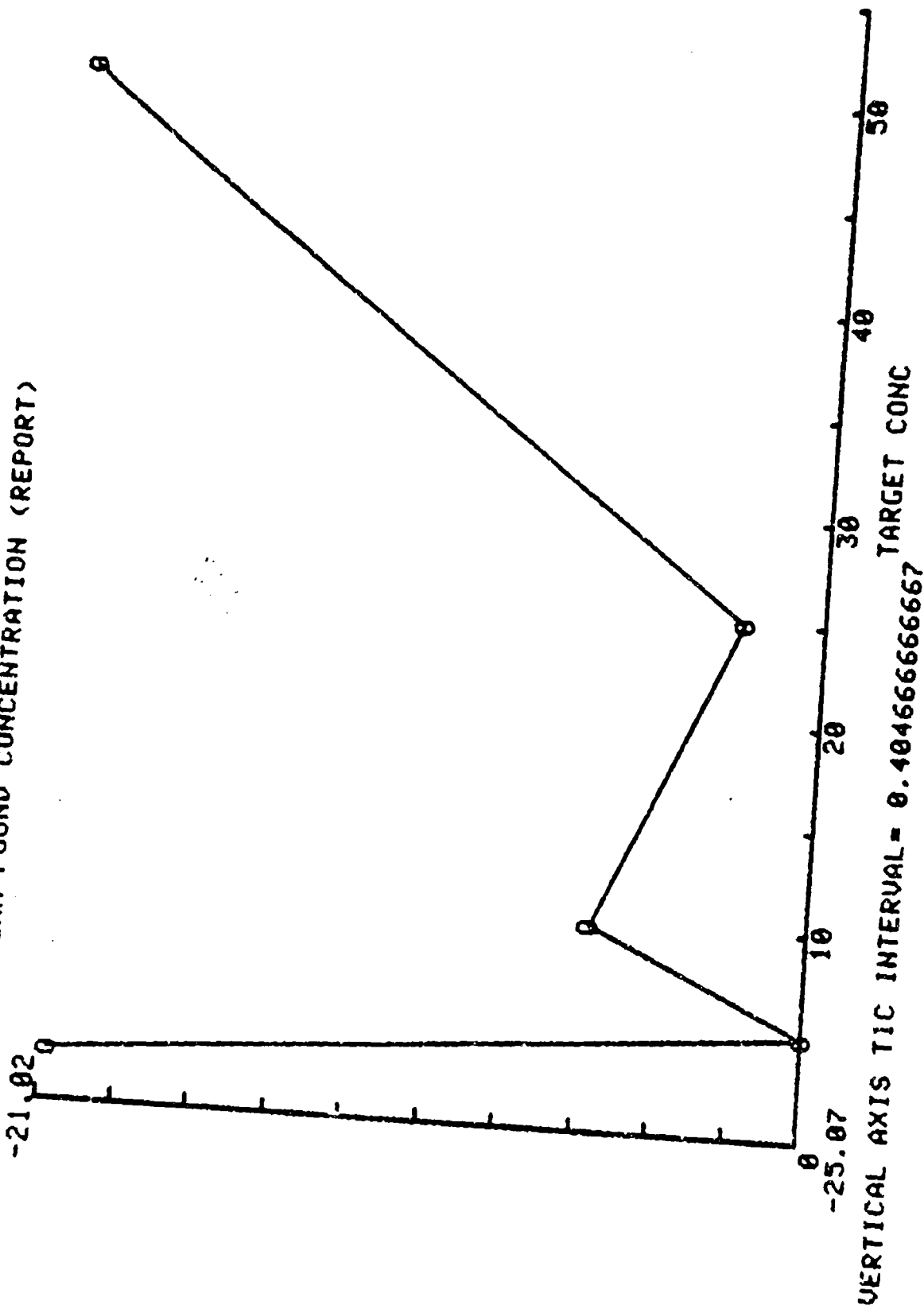
Figure II-6... 2,4-DNT on Transite (3 days) — Graph of Inaccuracy

2,4-DINITROTOLUENE (24DNT)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.66260644905
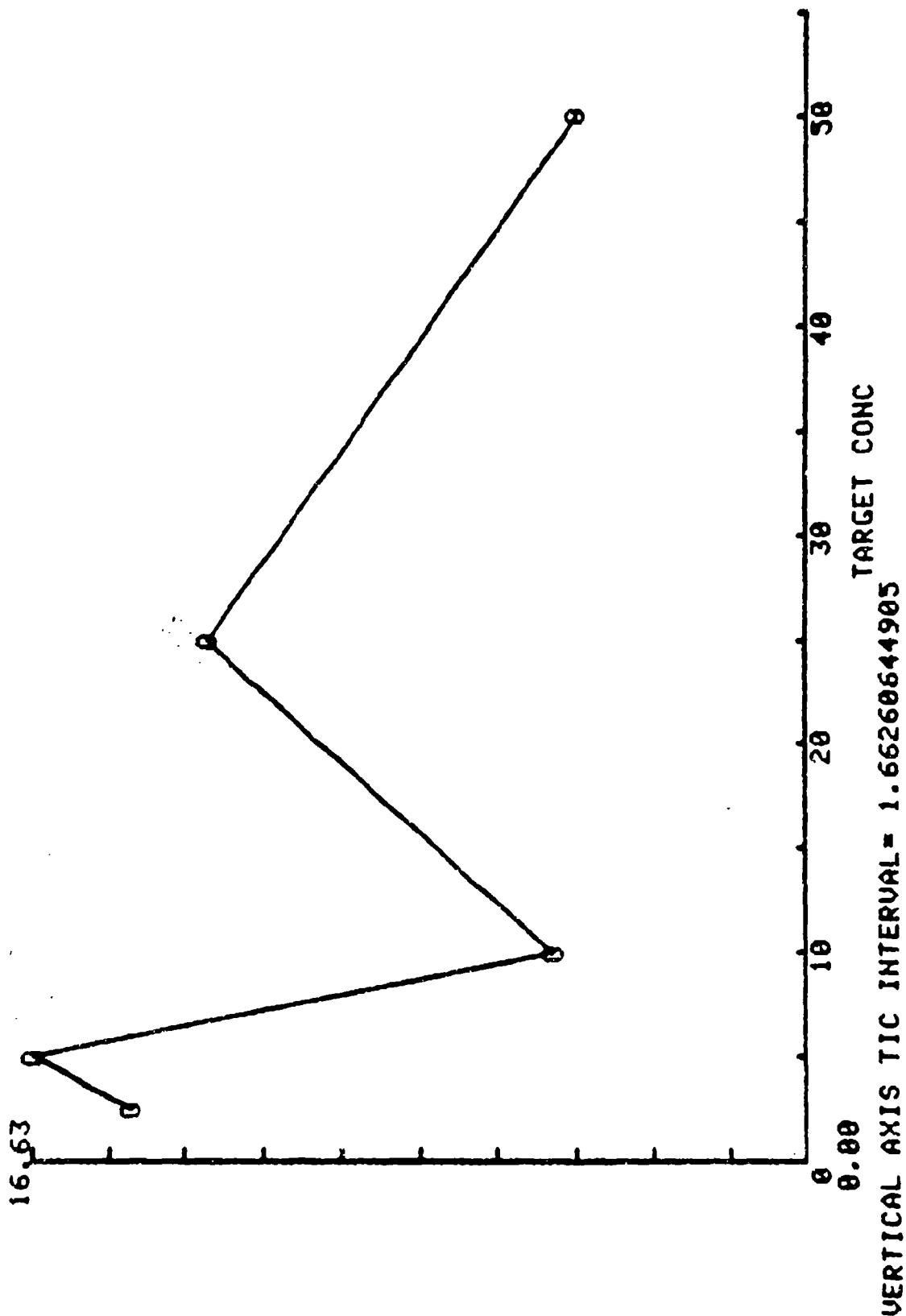
TARGET CONC

Figure 11-63. 2,4-DNT on Transite (3 days) - Graph of
Imprecision

Table 11-65. TNT on Metal - Target vs. Found Concentrations

2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.920
	2.140
	2.120
	1.810
5.000	3.360
	4.510
	4.020
	3.910
10.000	9.560
	9.090
	8.070
	8.680
25.000	23.630
	24.690
	21.180
	20.570
50.000	48.040
	50.620
	43.920
	50.080

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2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.8358535872

FOUND CONC
MEAN= 17.896 SD= 17.6143310075

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.9017010517B
SLOPE= 0.9728487B5502
  USE FOR ACCURACY
R= 0.99608543341B
MEAN SQR DEV OF POINTS FROM REGRESSION= 2.559034918B9
ST ERROR EST= 1.59996383B373
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7340609640B
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 2.01477436407
x(d)= 5.35490116683

2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
FOUND CONC

58.62

y(c)

0.00

VERTICAL AXIS TIC INTERVAL= 5.862

TARGET CONC
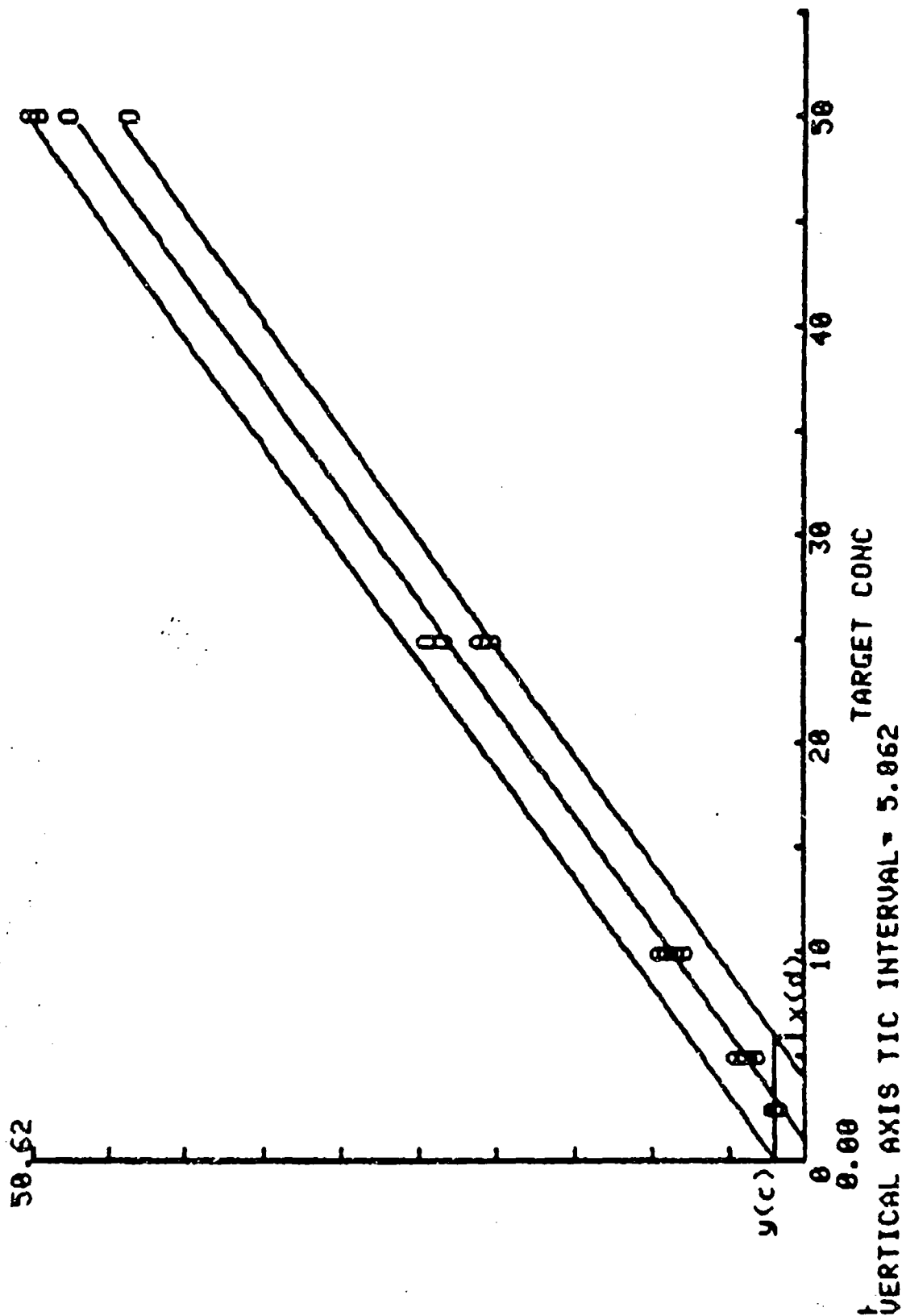
Figure 11-64. TNT on Metal — Graph of Target-Found Concentration Points

Table II-67. TNT on Metal – Inaccuracy and Imprecision
Data

2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.998	0.160	-20.100	7.993
5.000	3.950	0.472	-21.000	11.948
10.000	8.850	0.632	-11.500	7.143
25.000	22.518	1.961	-9.930	8.710
50.000	48.165	3.040	-3.670	6.312
Means		1.253	-13.240	8.421

2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)
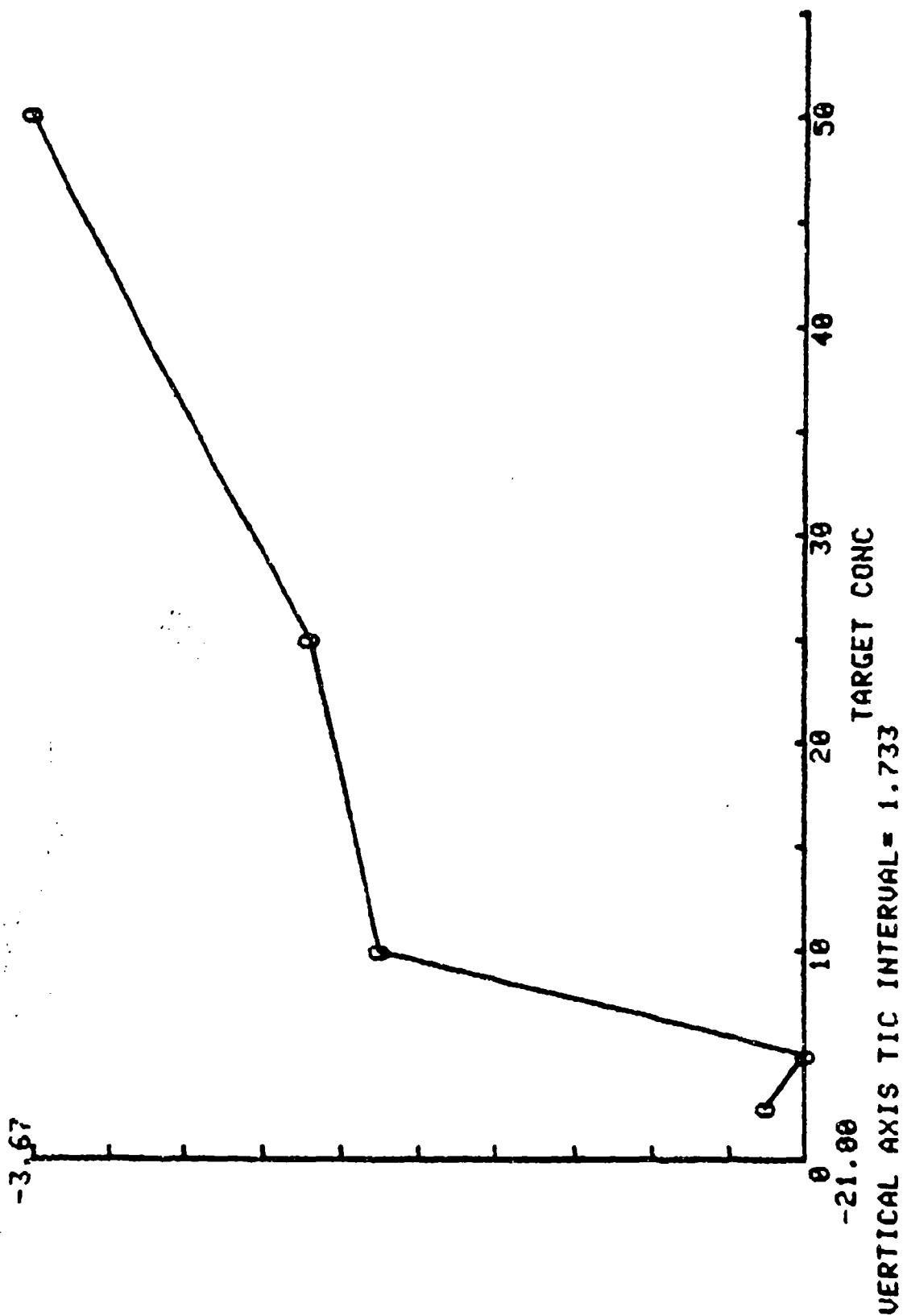
Figure 11-65. TNT on Metal — Graph of Inaccuracy

2,4,6-TRINITROTOLUENE (246TNT)
METAL SURFACE
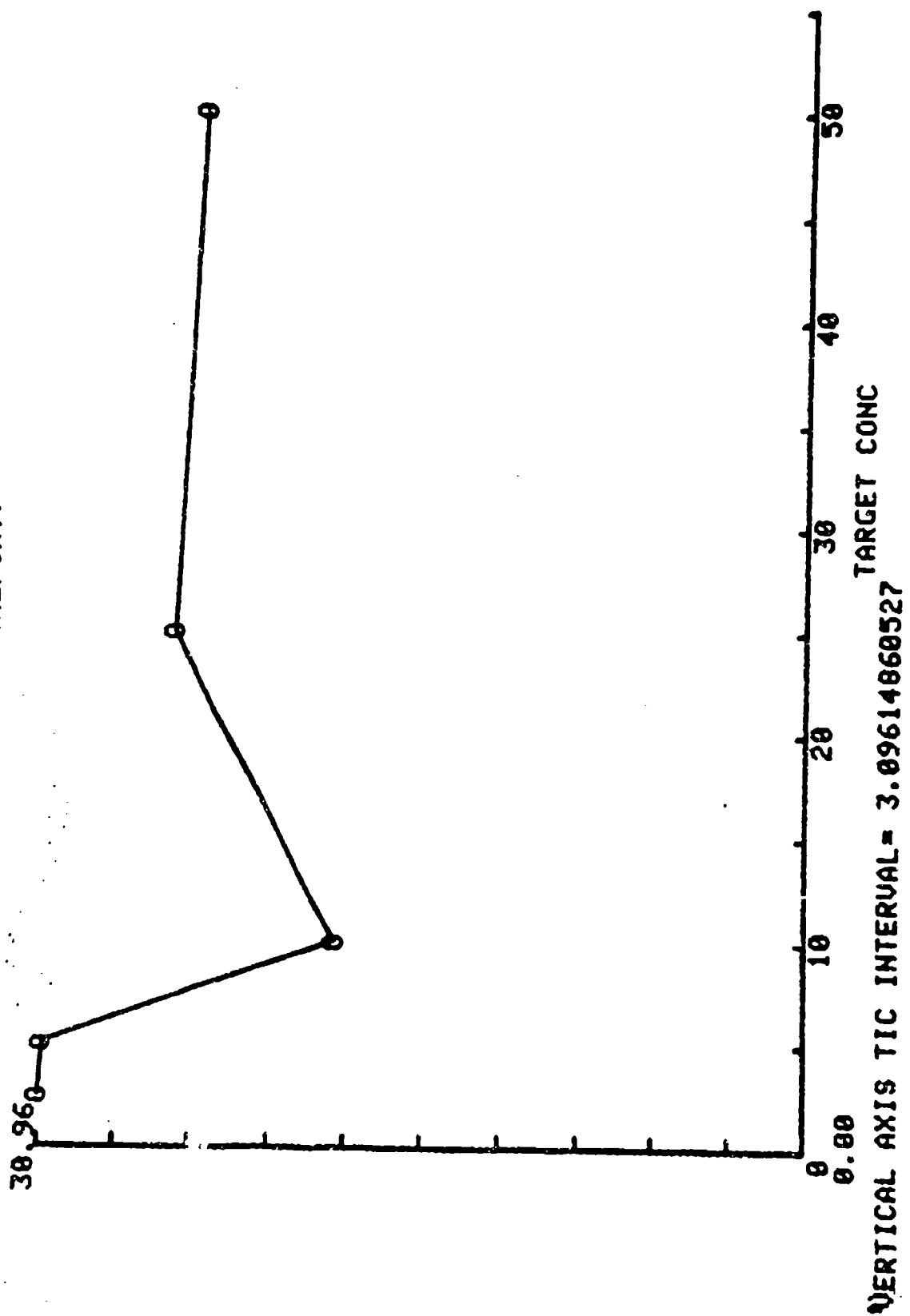IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.19400082185
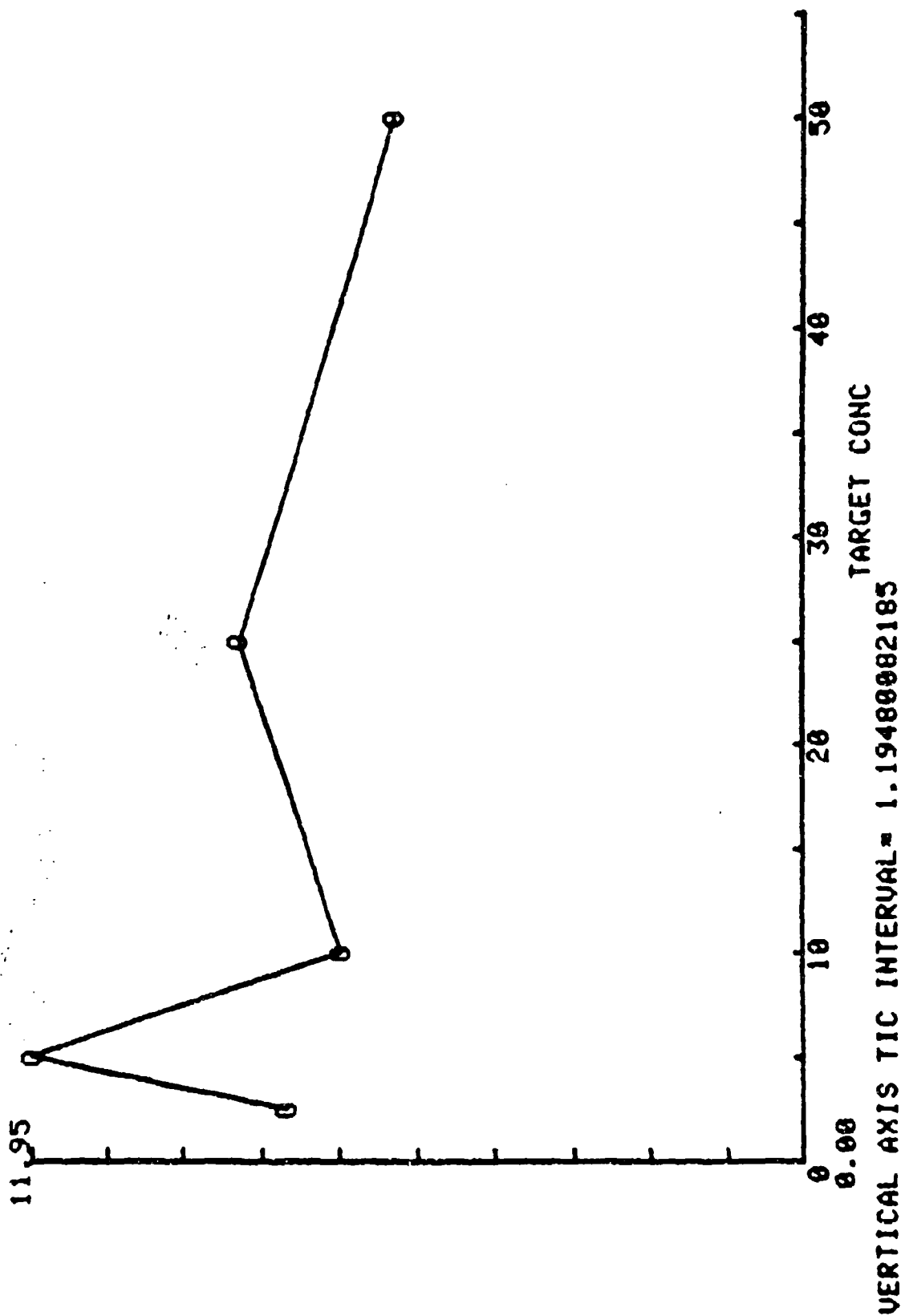
Figure 11-66. TNT on Met. 1 - Graph of Imprecision

Table II-68. TNT on Concrete - Target vs. Found
Concentrations

2,4,6-TRINITROTOLUENE (246TNT)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC.

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.540
	2.020
	1.310
	1.790
5.000	3.950
	4.430
	3.090
	3.200
10.000	6.960
	7.630
	5.250
	6.690
25.000	19.840
	20.130
	14.290
	17.430
50.000	40.730
	43.930
	27.160
	35.640

2,4,6-TRINITROTOLUENE (246TNT)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 13.3505 SD= 13.7346130078

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.36244538835
SLOPE= 0.74124028291262
  USE FOR ACCURACY
R= 0.973329817619
MEAN SQR DEV OF POINTS FROM REGRESSION= 10.4794771204
ST ERROR EST= 3.23720205122
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 5.53942979924
x(d)= 15.7269052076
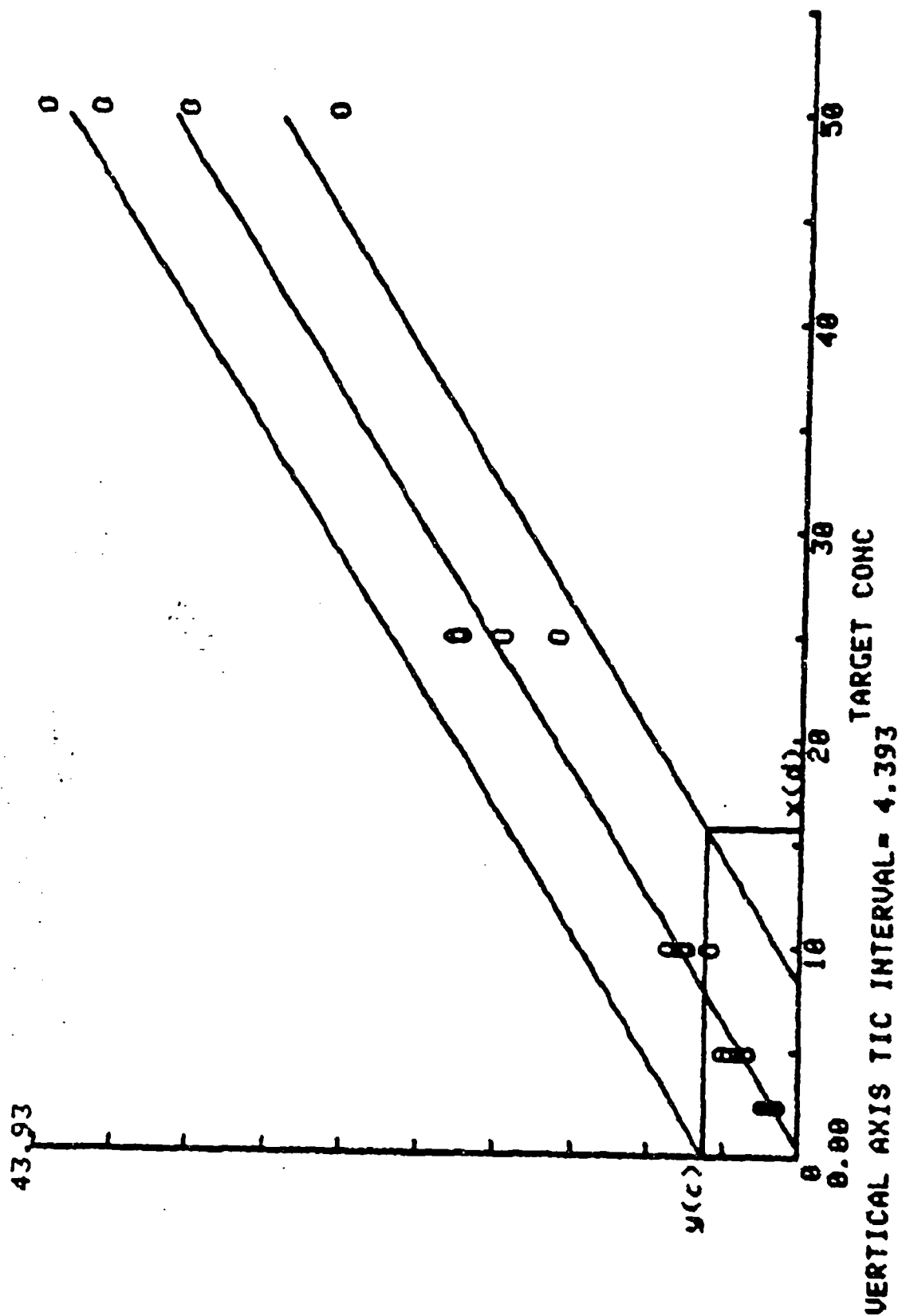
Figure 11-67. TNT on Concrete — Graph of Target—Found Concentration Points

Table 11-70. TNT on Concrete – Inaccuracy and Imprecision Data

2,4,6-TRINITROTOLUENE (246TNT)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.665	0.307	-33.400	18.456
5.000	3.668	0.636	-26.658	17.340
10.000	6.633	1.003	-33.675	15.120
25.000	17.923	2.787	-28.310	15.105
50.000	36.865	7.315	-26.270	19.843
Means		2.394	-29.661	17.173

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2,4,6-TRINITROTOLUENE (246TNT)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 8.7405   TARGET CONC
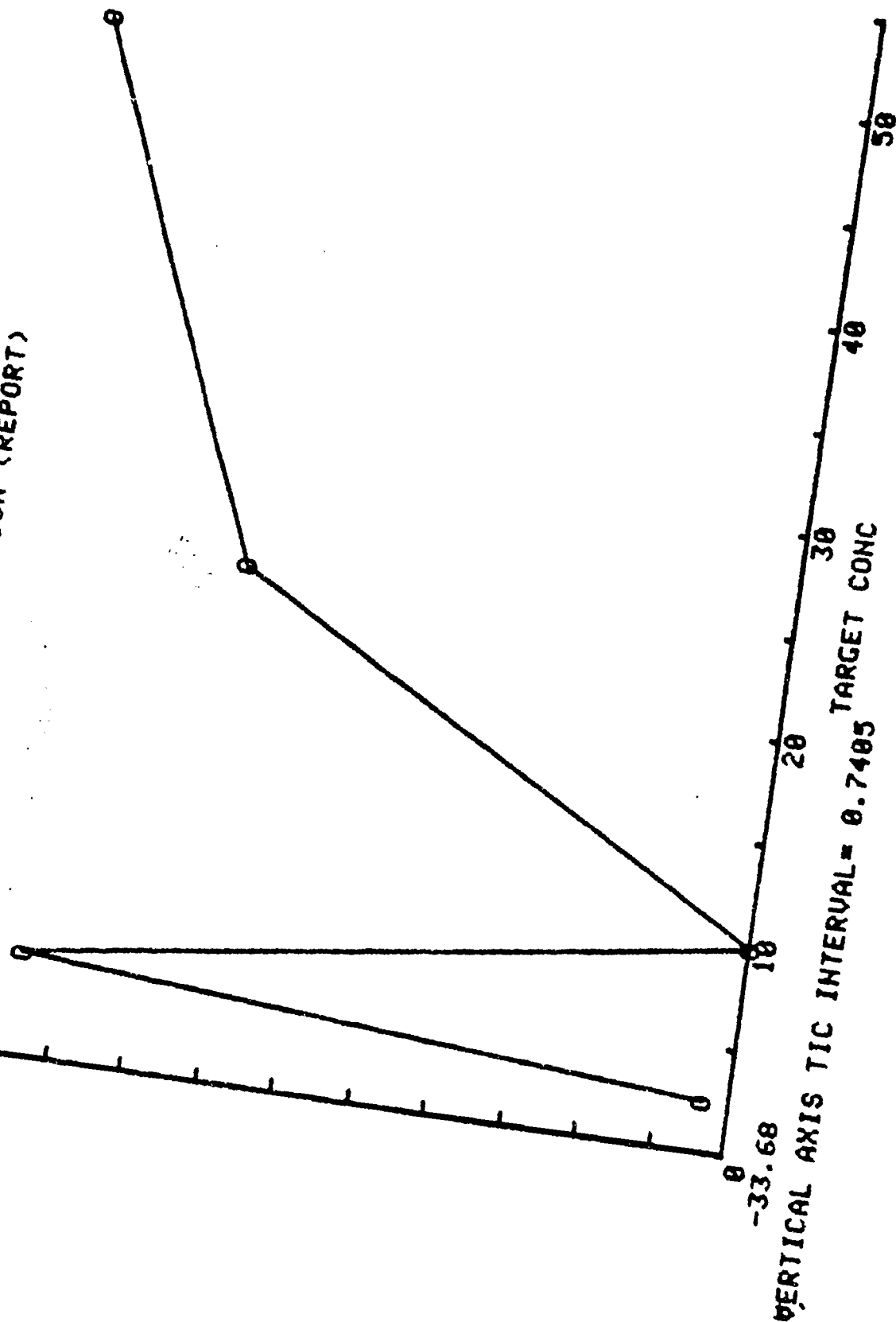
Figure 11-68. TNT on Concrete — Graph of Inaccuracy

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2,4,6-TRINITROTOLUENE (246TNT)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.9843371846
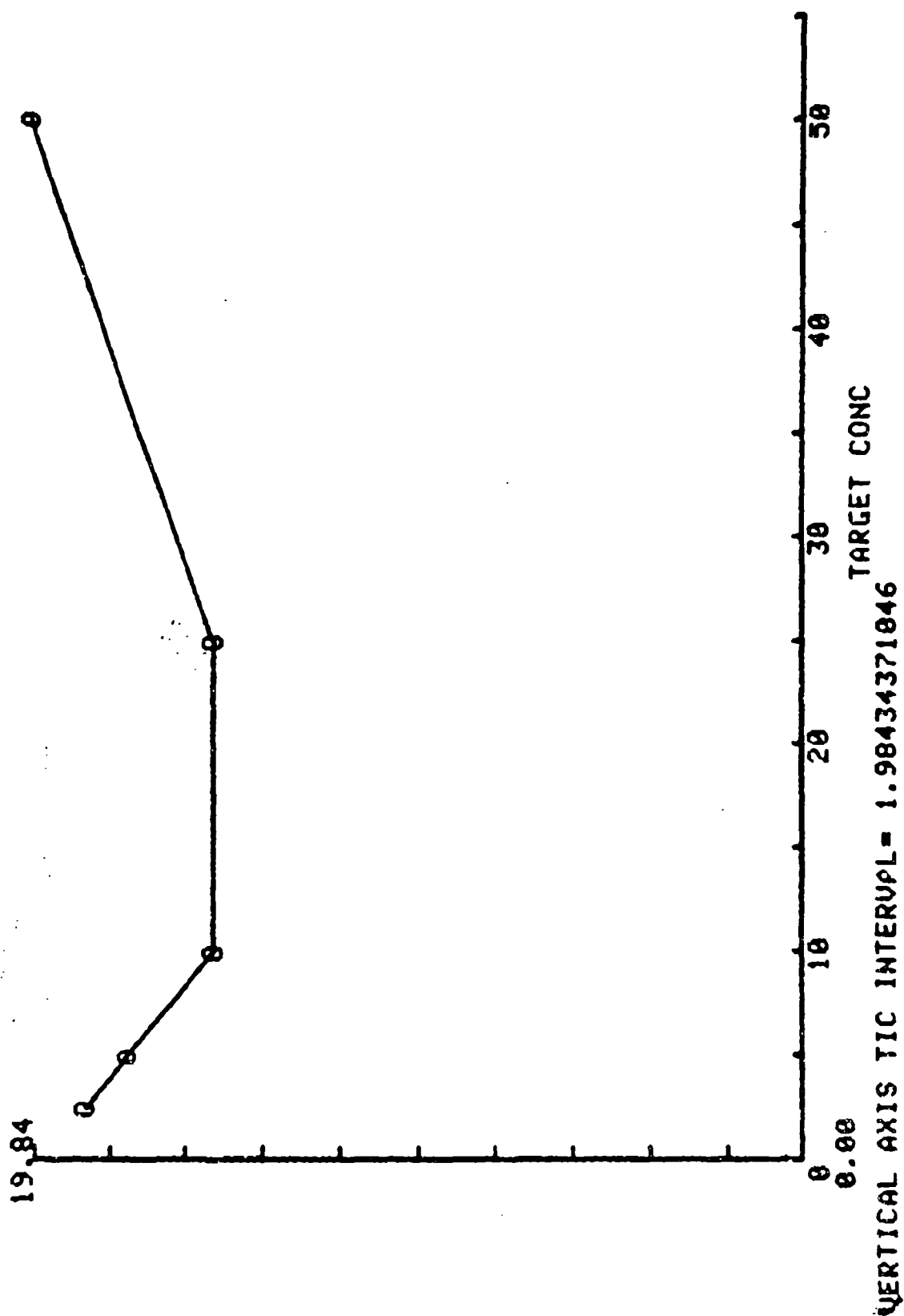
Figure 11-69. TNT on Concrete – Graph of Imprecision

Table 11-71. TNT on Brick - Target vs. Found Concentrations

2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.470
	1.960
	0.890
	1.800
5.000	2.320
	5.930
	4.100
	4.180
10.000	8.080
	6.280
	7.310
	9.400
25.000	20.760
	15.210
	13.750
	20.760
50.000	36.650
	34.530
	24.570
	38.460

Table 11-72. TNT on Brick – Analysis of Target – Found Concentration Points

2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 12.9205 SD= 12.3402646372

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.645345873786
SLOPE= 0.663521844466
 USE FOR ACCURACY
R= 0.969724180462
MEAN SQR DEV OF POINTS FROM REGRESSION= 9.58589122507
ST ERROR EST= 3.09610984606
 USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 6.28998864488
x(d)= 16.8001912189

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2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
FOUND CONC
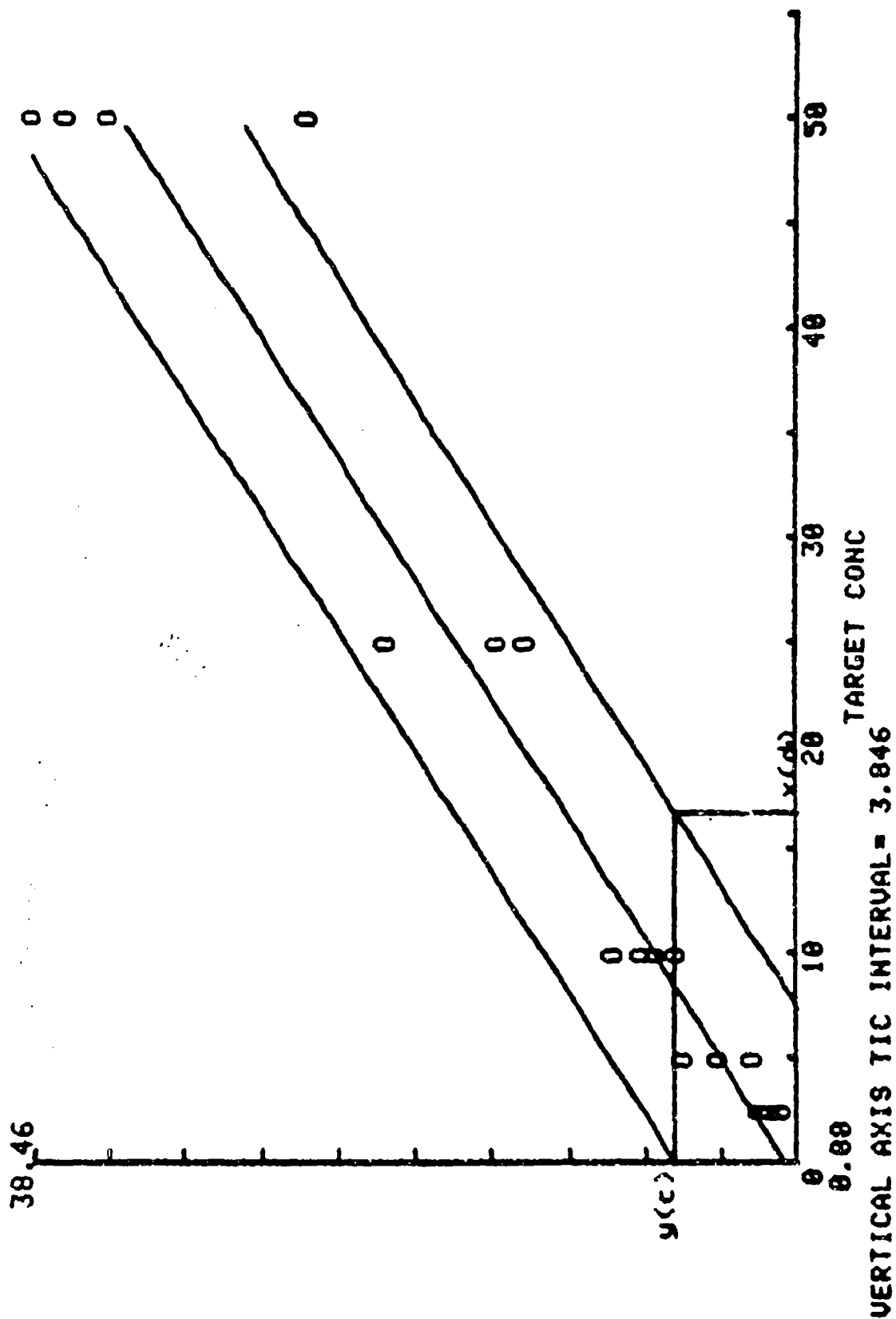
Figure 11-70. TNT on Brick — Graph of Target-Found
Concentration Points

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Table II-73. TNT on Brick - Inaccuracy and Imprecision Data

2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.538	0.473	-38.800	30.911
5.000	4.133	1.474	-17.350	35.672
10.000	7.768	1.315	-22.325	16.925
25.000	17.620	3.674	-29.520	20.854
50.000	33.553	6.200	-32.895	18.478
Means		2.627	-28.178	24.568

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2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 2.145
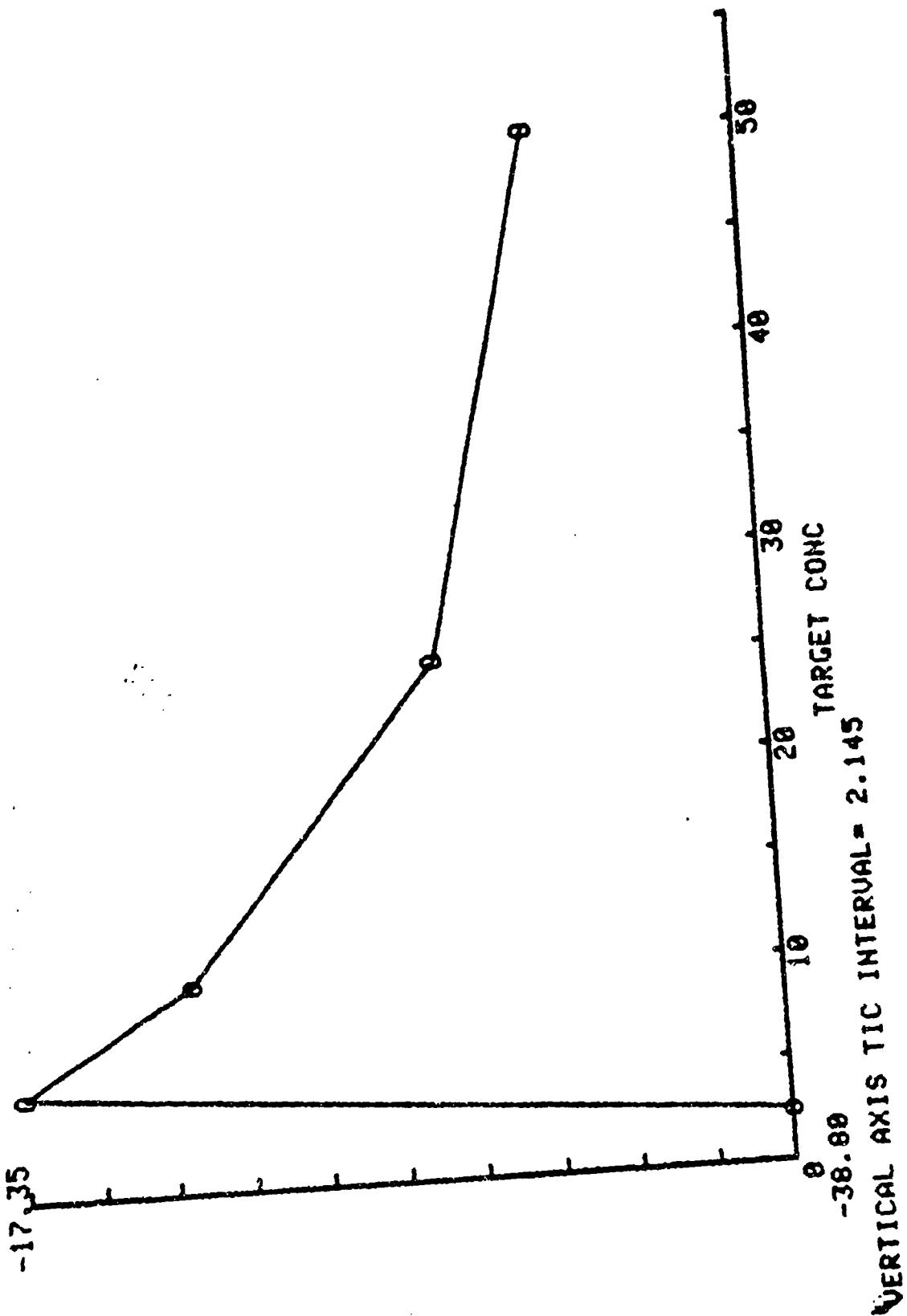
Figure 11-71. TNT on Brick — Graph of Inaccuracy

2,4,6-TRINITROTOLUENE (246TNT)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 3.5672445244
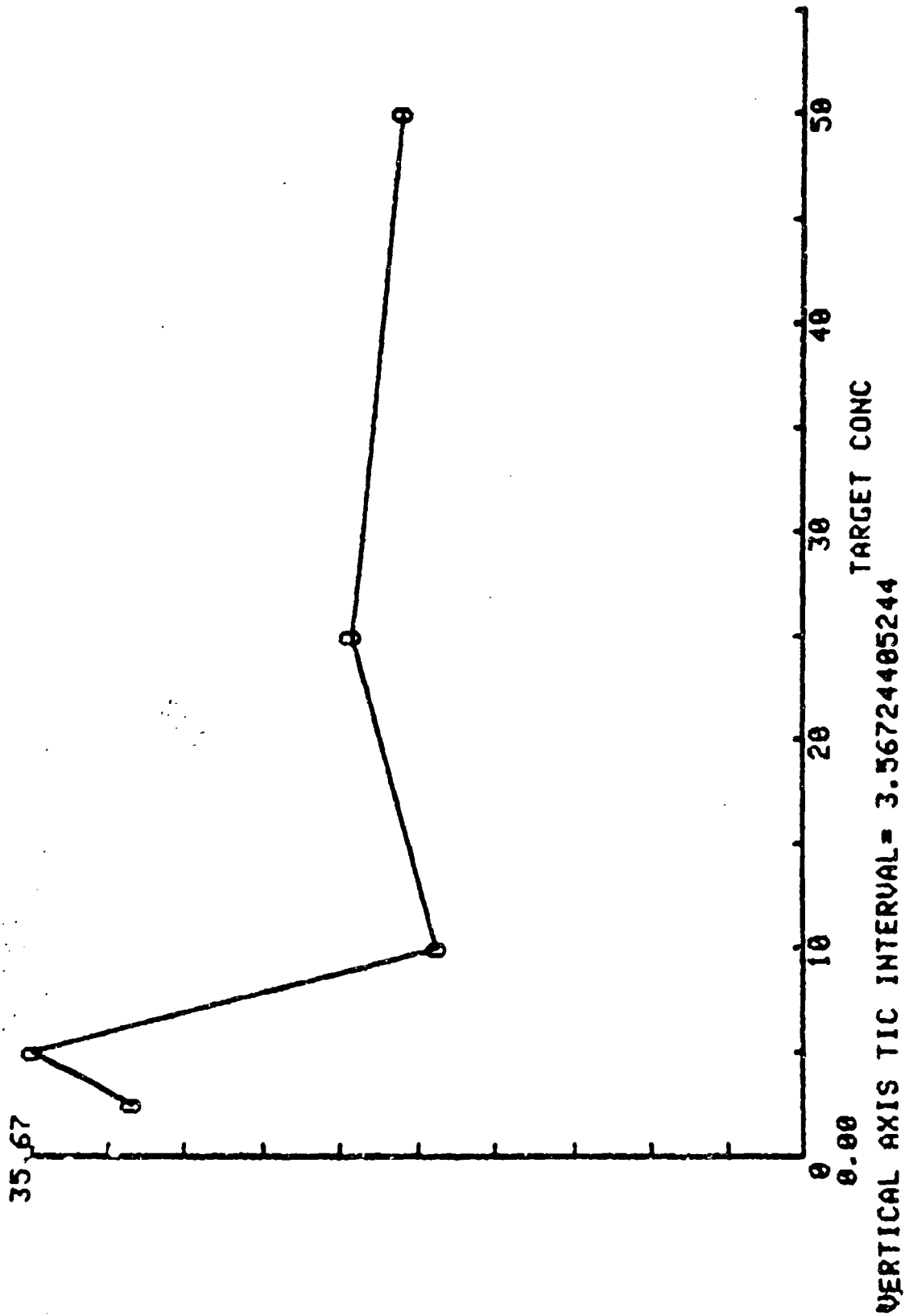
Figure 11-72. TNT on Brick - Graph of Imprecision

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Table 11-74. TNT on Transite – Target vs. Found (Concentrations)

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.160
	1.770
	1.770
	0.900
5.000	1.560
	3.900
	3.510
	2.520
10.000	2.820
	7.770
	6.400
	5.880
25.000	6.450
	17.370
	16.330
	15.800
50.000	11.720
	28.790
	29.470
	32.170

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 9.903   SD= 18.1474591583

NO. RUNS { TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.4964684446602
SLOPE= 0.50846116S049
 USE FOR ACCURACY
R= 0.9036867747162
MEAN SQR DEV OF POINTS FROM REGRESSION= 19.9286214266
ST ERROR EST= 4.4641484S482
 USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7340696408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 8.6352397018 2
x(d)= 31.8194111464

Figure 11-73. TNT on Transite — Graph of Target-Found
Concentration Points

Table 11-76. TNT on Transite – Inaccuracy and Imprecision Data

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.400	0.440	-44.000	31.445
5.000	2.873	1.050	-42.550	36.562
10.000	5.718	2.090	-42.825	36.549
25.000	13.988	5.067	-44.050	36.226
50.000	25.538	9.327	-48.925	36.521
Means		3.595	-44.470	35.461

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC
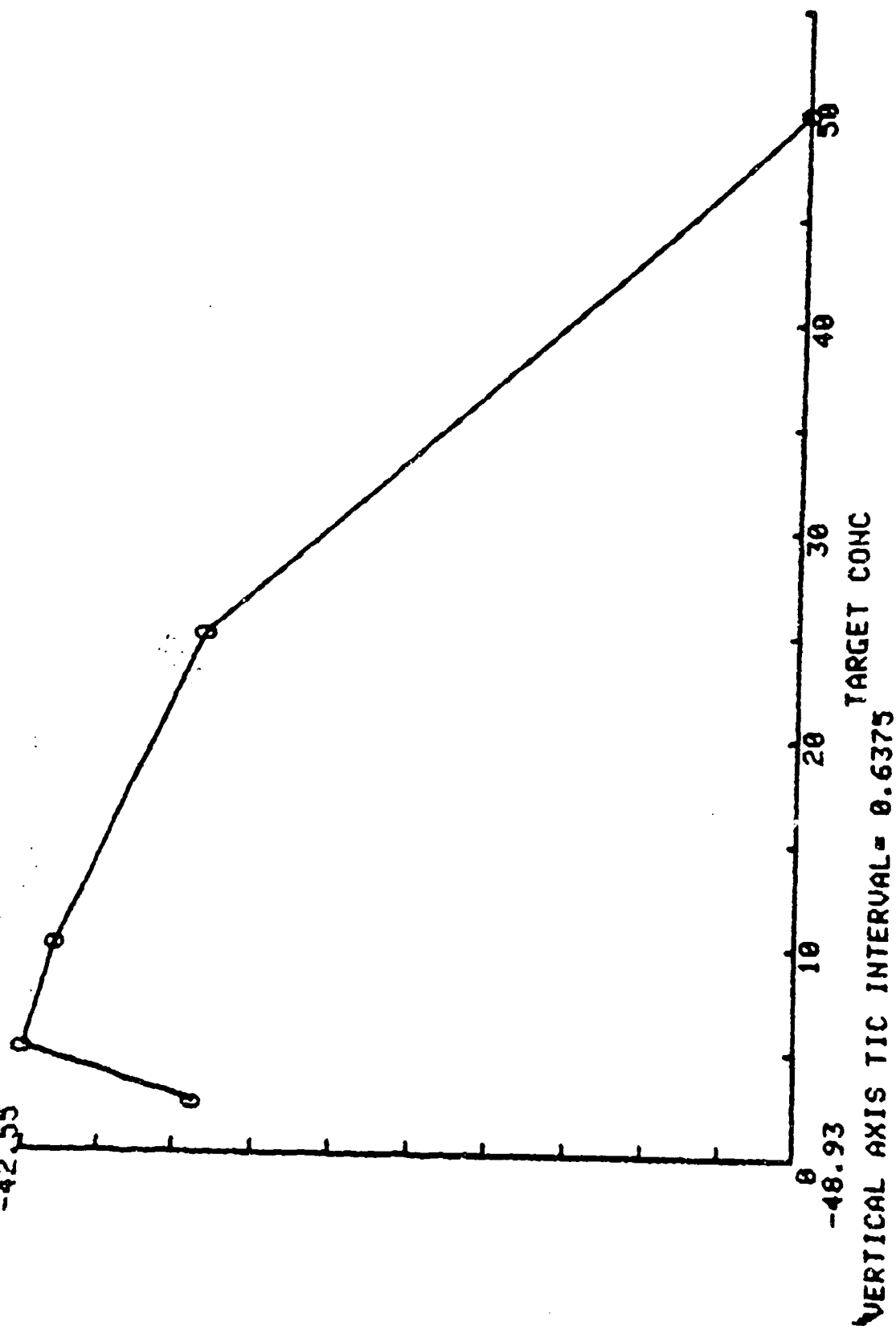
VERTICAL AXIS TIC INTERVAL= 0.6375

Figure 11-74. TNT on Transite — Graph of Inaccuracy

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL = 3.65622269885

Figure 11-79. TNT on Transite – Graph of Imprecision

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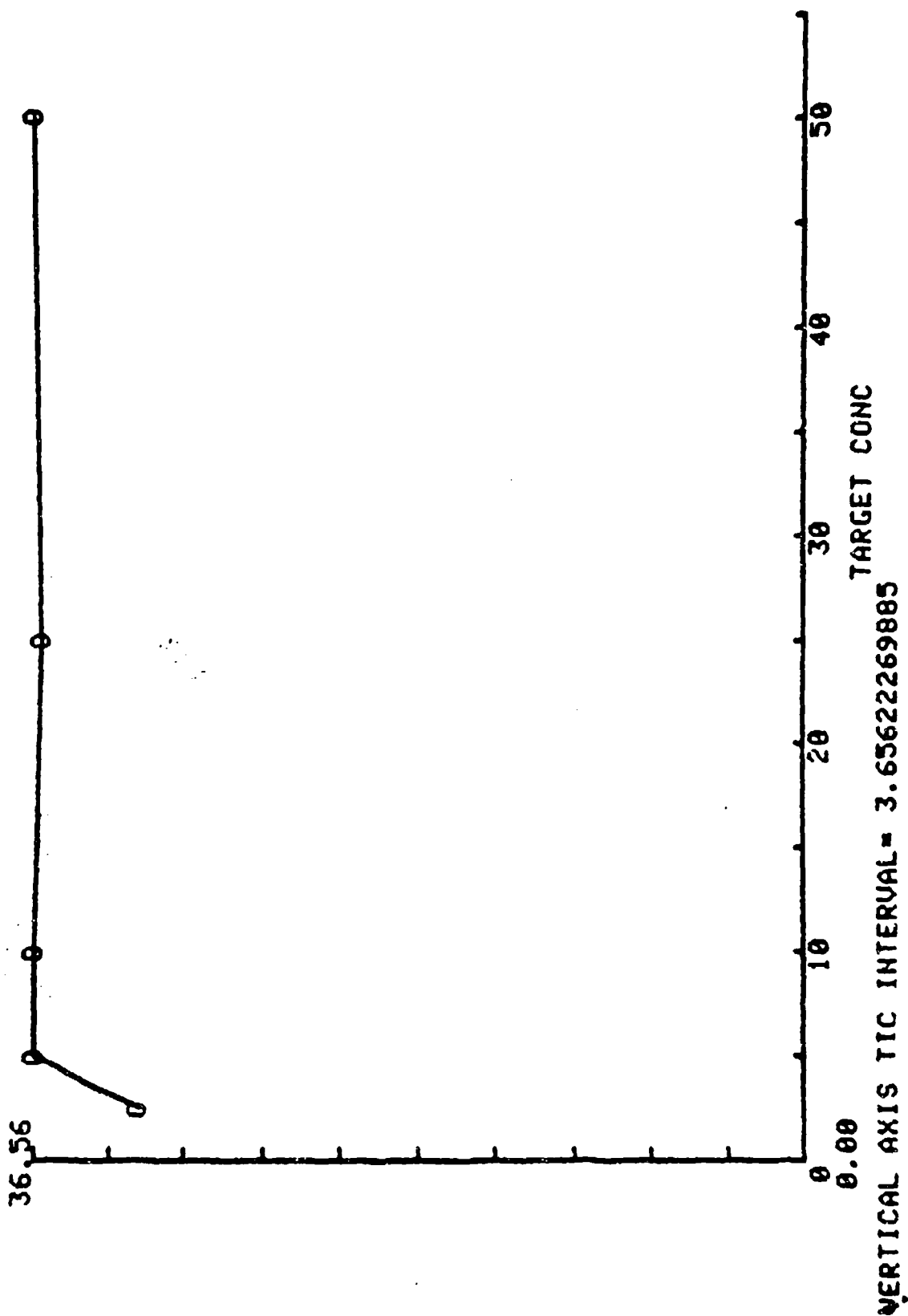
Table II-77. TNT on Transite (3 days) - Target vs.
Found Concentrations

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.770 1.770 0.900
5.000	3.900 3.510 2.520
10.000	7.770 6.400 5.880
25.000	17.370 16.330 15.880
50.000	28.790 29.470 32.170

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 11.6233333333   SD= 11.0214567787

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.4683522211435
SLOPE= 0.602971952535
  USE FOR ACCURACY
R= 0.9954887641
MEAN SQR DEV OF POINTS FROM REGRESSION= 1.18801497594
ST ERROR EST= 1.08996099744
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(C)= 2.52974974353
x(d)= 6.77062537754

Figure 11-76. TNT on Transite (3 days) - Graph of Target-Found Concentration Points

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2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
FOUND CONC

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 3.217

Table 11-79. TNT on Transite (3 days) — Inaccuracy and Imprecision Data

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.480	0.502	-40.800	33.939
5.000	3.310	0.711	-33.800	21.493
10.000	6.683	0.976	-33.167	14.689
25.000	16.500	0.799	-34.000	4.841
50.000	30.143	1.788	-39.713	5.931
Means		0.955	-36.296	16.162

2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 0.763333333333

TARGET CONC
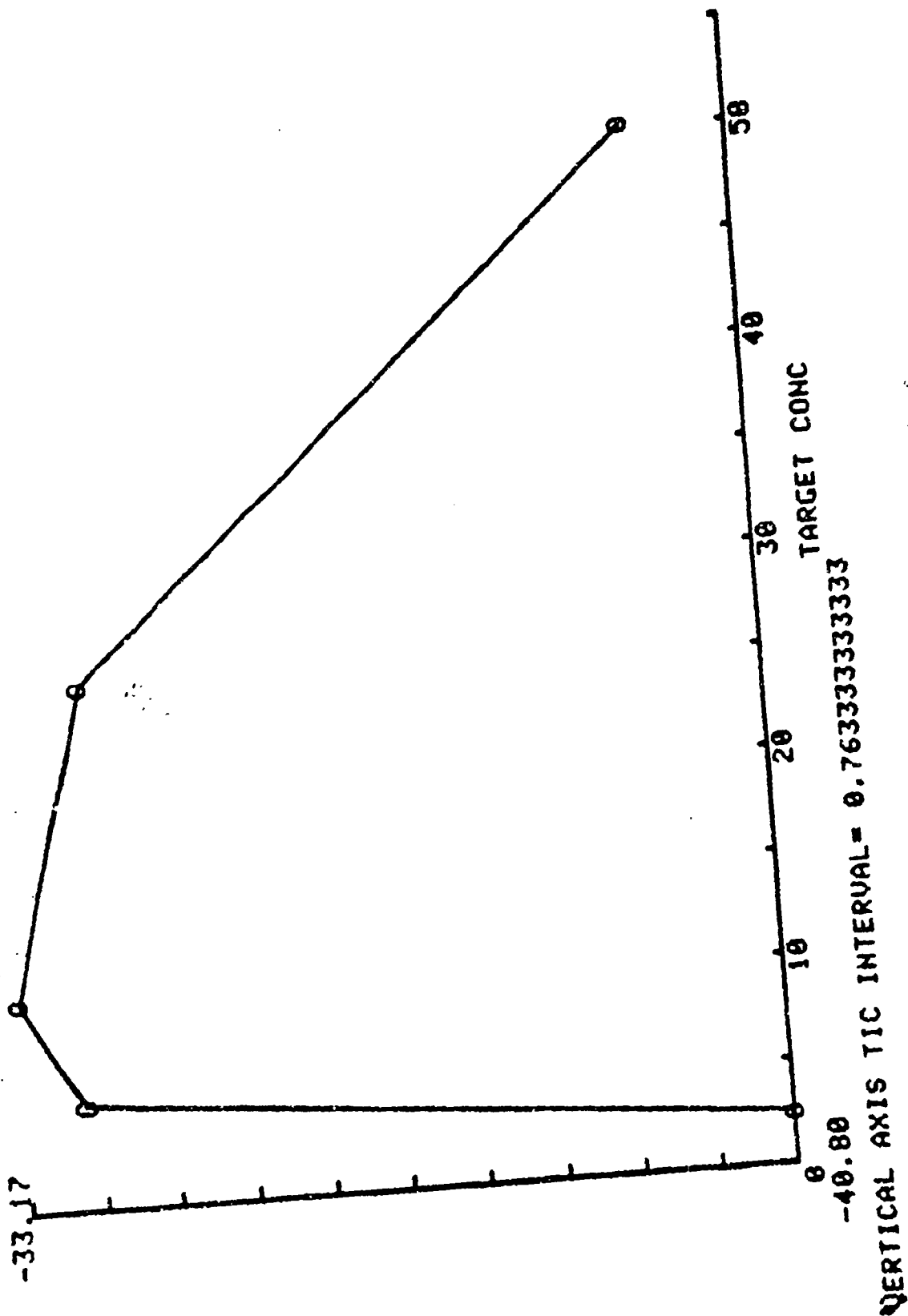
Figure 11-77. TNT on Transite (3 days) – Graph of
Inaccuracy

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2,4,6-TRINITROTOLUENE (246TNT)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 3.3938833916
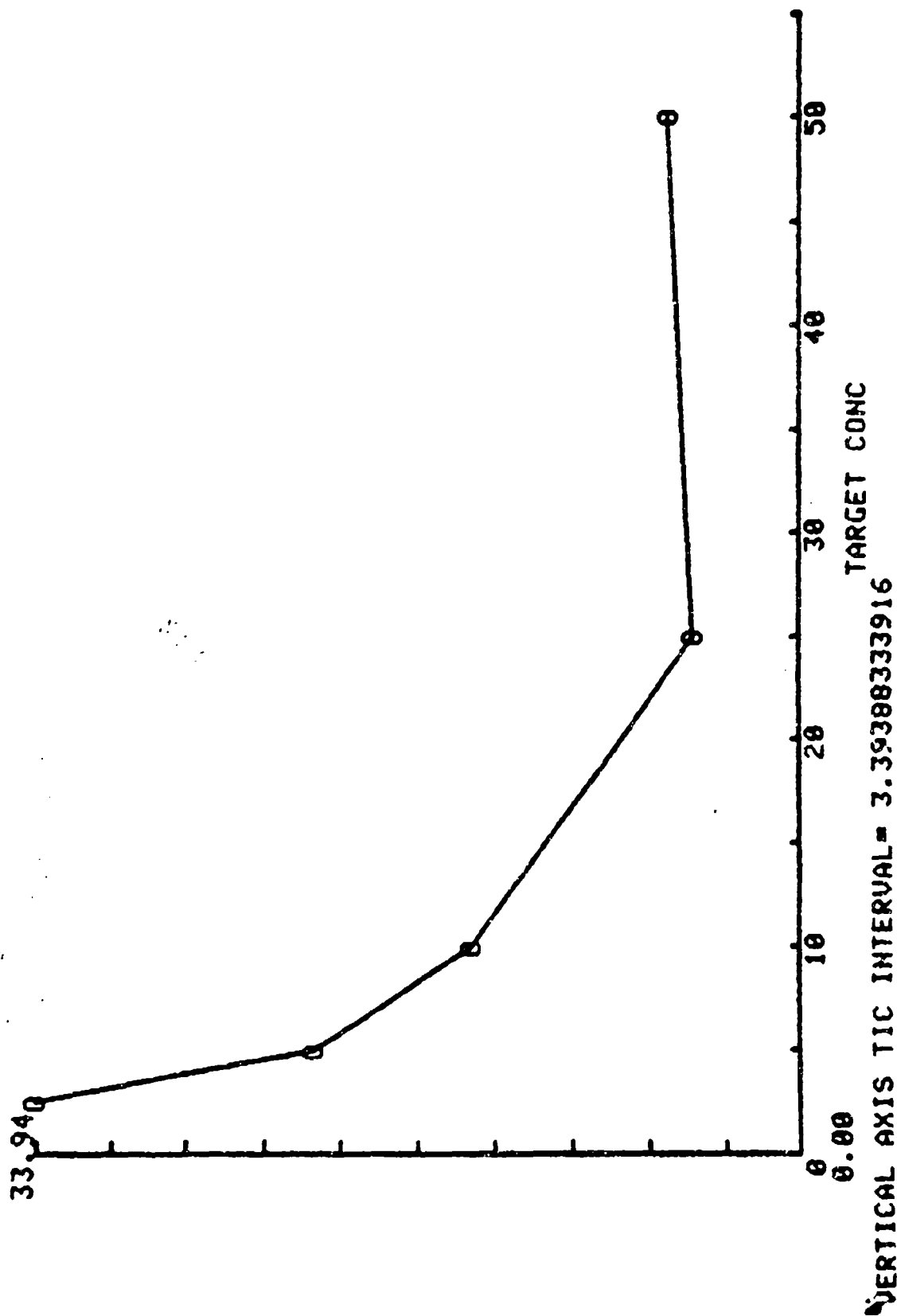
Figure II-78. TNT on Transite (3 days) – Graph of
Imprecision

Table II-80. Tetryl on Metal — Target vs. Found
Concentrations

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
TARGET CONC. vs FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	1.020
	0.810
	0.000
	0.000
5.000	2.660
	2.430
	0.110
	0.250
10.000	8.520
	8.140
	2.620
	2.070
25.000	22.940
	19.600
	8.610
	11.160
50.000	48.900
	46.740
	41.180
	32.350

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 13.0455   SD= 16.5283732046

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -3.229530744434
SLOPE= 0.879731391586
   USE FOR ACCURACY
R= 0.959925250553
MEAN SQR DEV OF POINTS FROM REGRESSION= 22.64913660617
ST ERROR EST= 4.75911108478
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.734060096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 5.4469848777
x(d)= 19.476685492

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
FOUND CONC

VERTICAL AXIS TIC INTERVAL= 4.89

TARGET CONC

Figure 11-79. Tetryl on Metal — Graph of Target-Found
Concentration Points

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	0.658	0.864	-73.700	131.401
5.000	1.363	1.370	-72.750	108.540
10.000	5.338	3.466	-46.625	64.941
25.000	15.578	6.793	-37.690	43.610
50.000	42.293	7.383	-15.415	17.457
Means		3.975	-49.236	71.590

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)
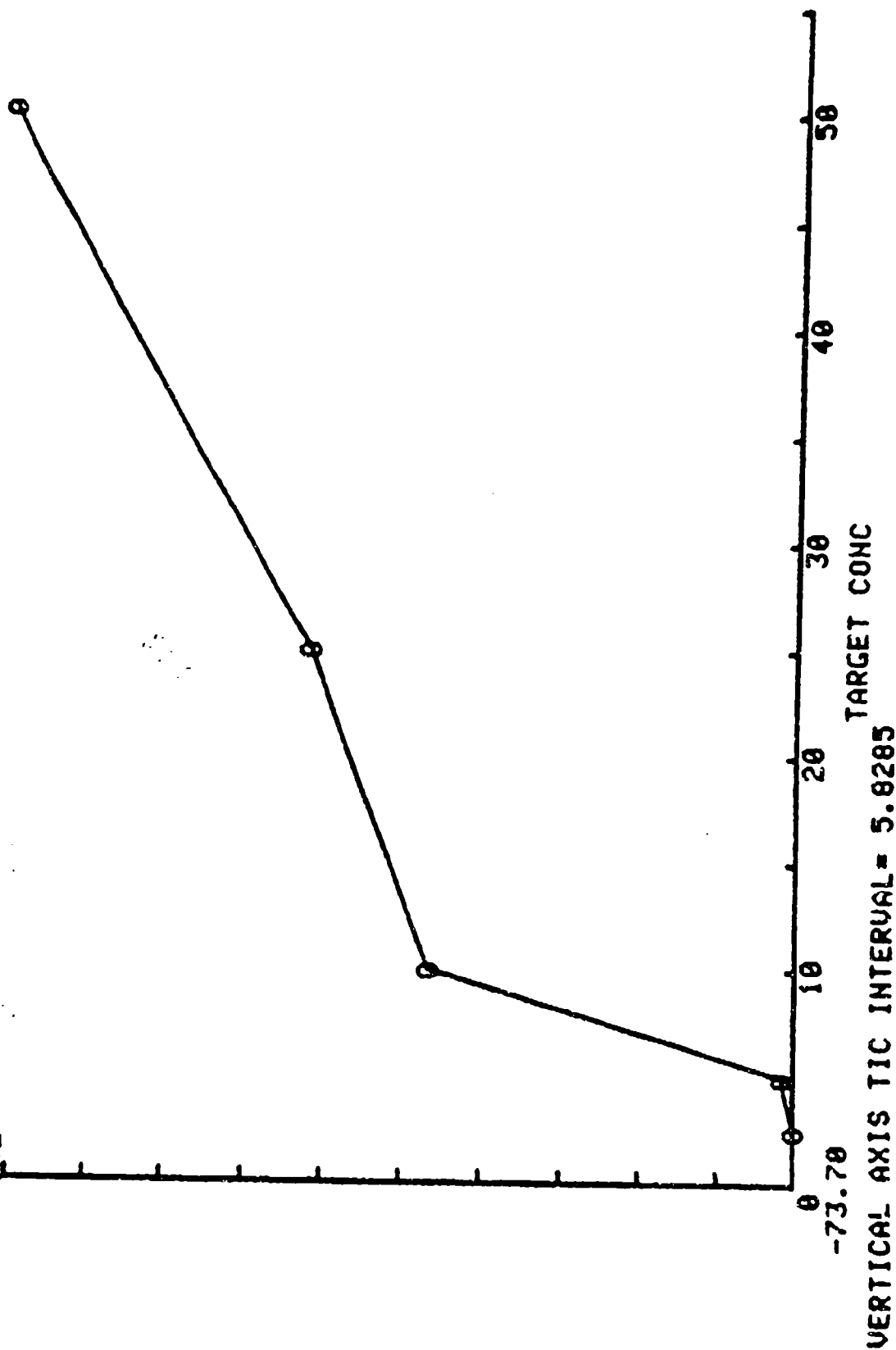
Figure 11-80.   Tetryl on Metal – Graph of Inaccuracy

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 13.1400594838
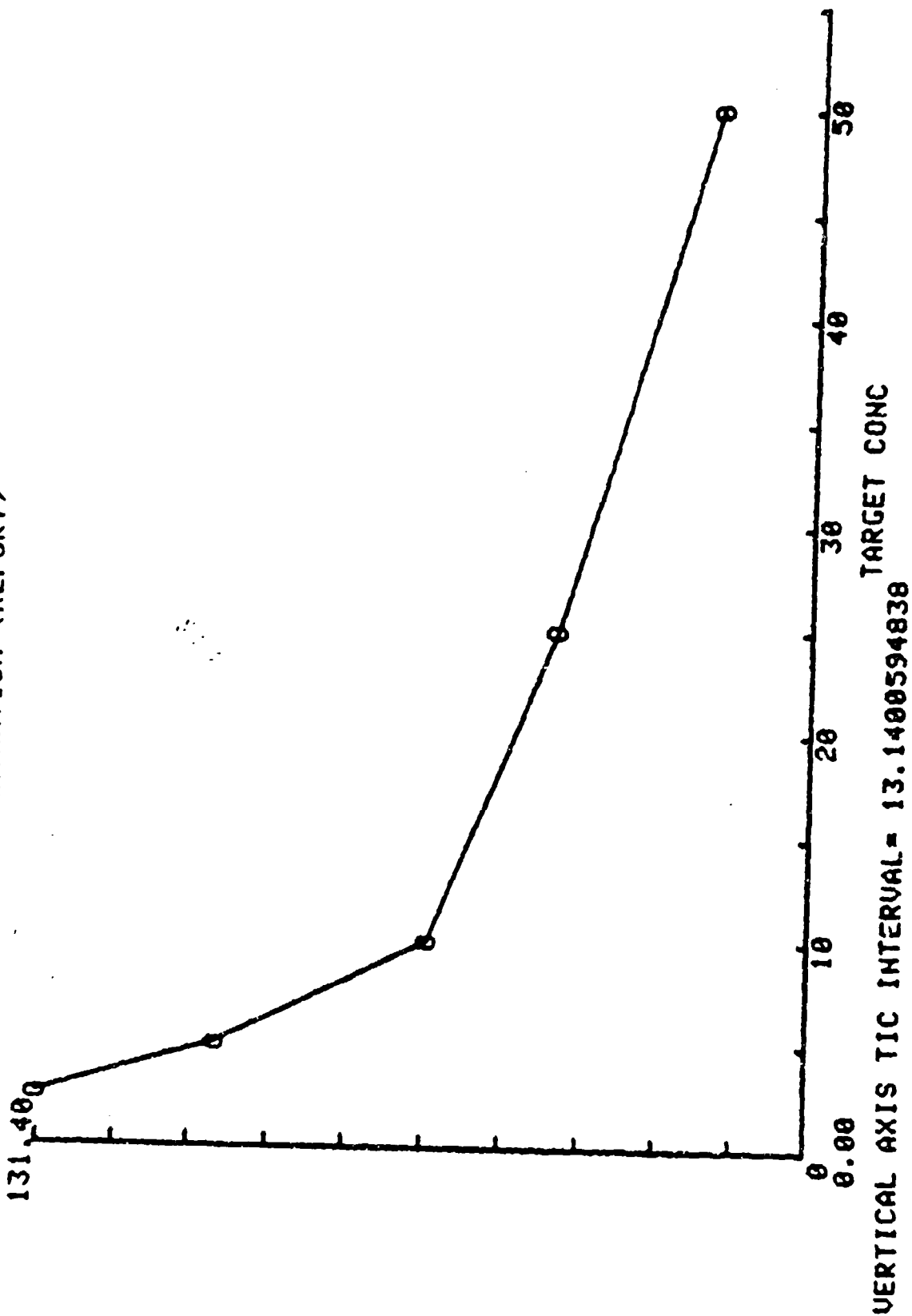
TARGET CONC

Figure 11-81. Tetryl on Metal — Graph of Imprecision

Table II-83. Tetryl on Concrete - Target vs. Found
Concentrations

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.230
	0.520
	0.250
	0.350
5.000	1.500
	1.790
	0.350
	1.100
10.000	2.000
	3.960
	1.200
	1.250
25.000	15.930
	14.650
	3.460
	8.500
50.000	28.000
	40.160
	9.780
	18.020

240

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 7.702   SD= 10.8150614277

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -1.68730380259
SLOPE= 0.50752993535275
  USE FOR ACCURACY
R= 0.84635021641Z
MEAN SQR DEV OF POINTS FROM REGRESSION= 35.0255619146
ST ERROR EST= 5.91823976488
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 9.10248066865
x(d)= 42.90964479565

Figure 11-82. Tetryl on Concrete – Graph of Target–
Found Concentration Points

Table 11-35. Tetryl on Concrete - Inaccuracy and Imprecision Data

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	0.338	0.133	-86.500	39.262
5.000	1.185	0.624	-76.300	52.694
10.000	2.343	1.320	-76.575	56.353
25.000	10.635	5.779	-57.460	54.341
50.000	24.010	13.112	-51.980	54.618
Means		4.194	-69.763	51.452

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 3.452

TARGET CONC

Figure II-33. Tetryl on Concrete – Graph of Inaccuracy

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

56.35

0.00

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 5.63526135917
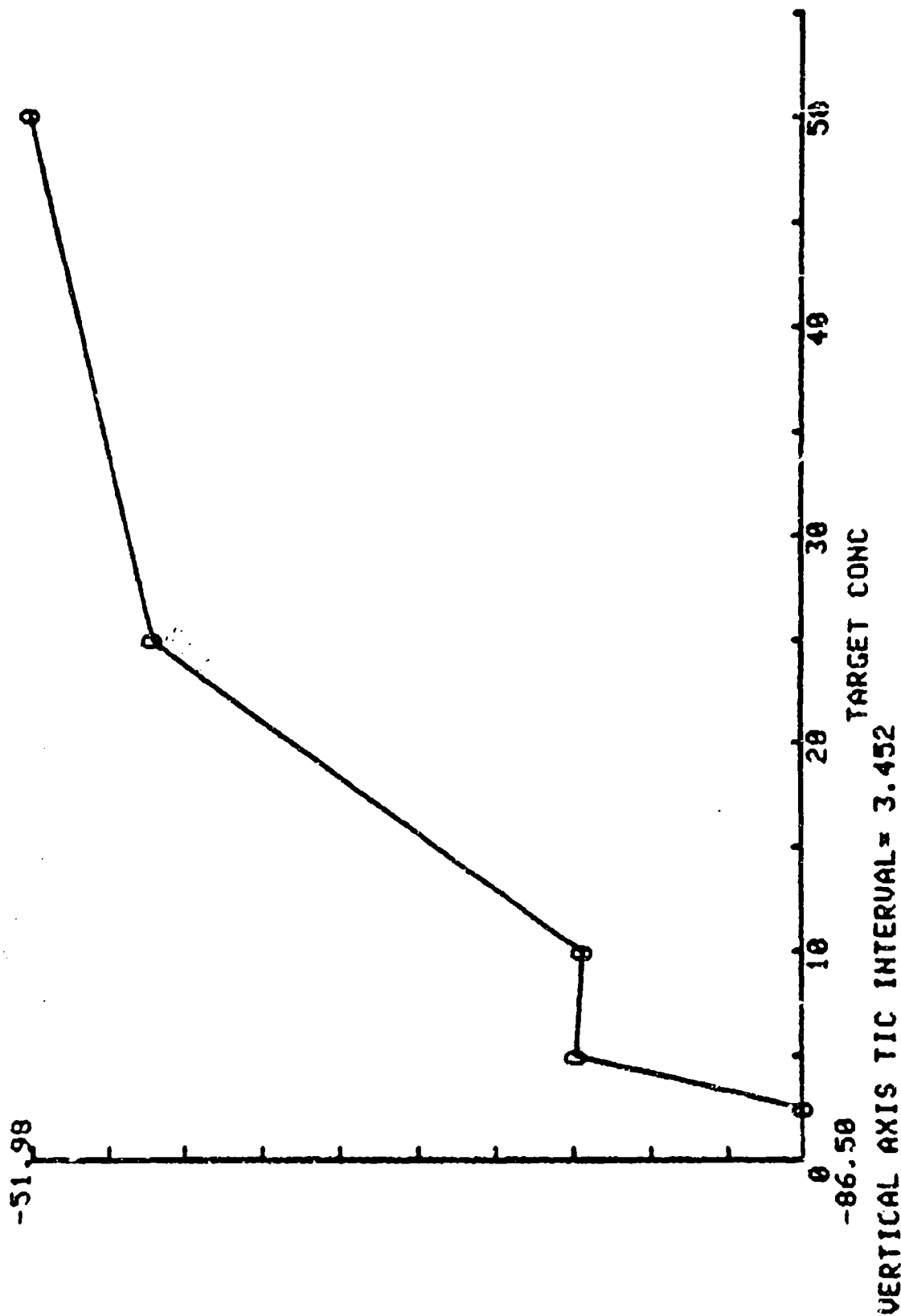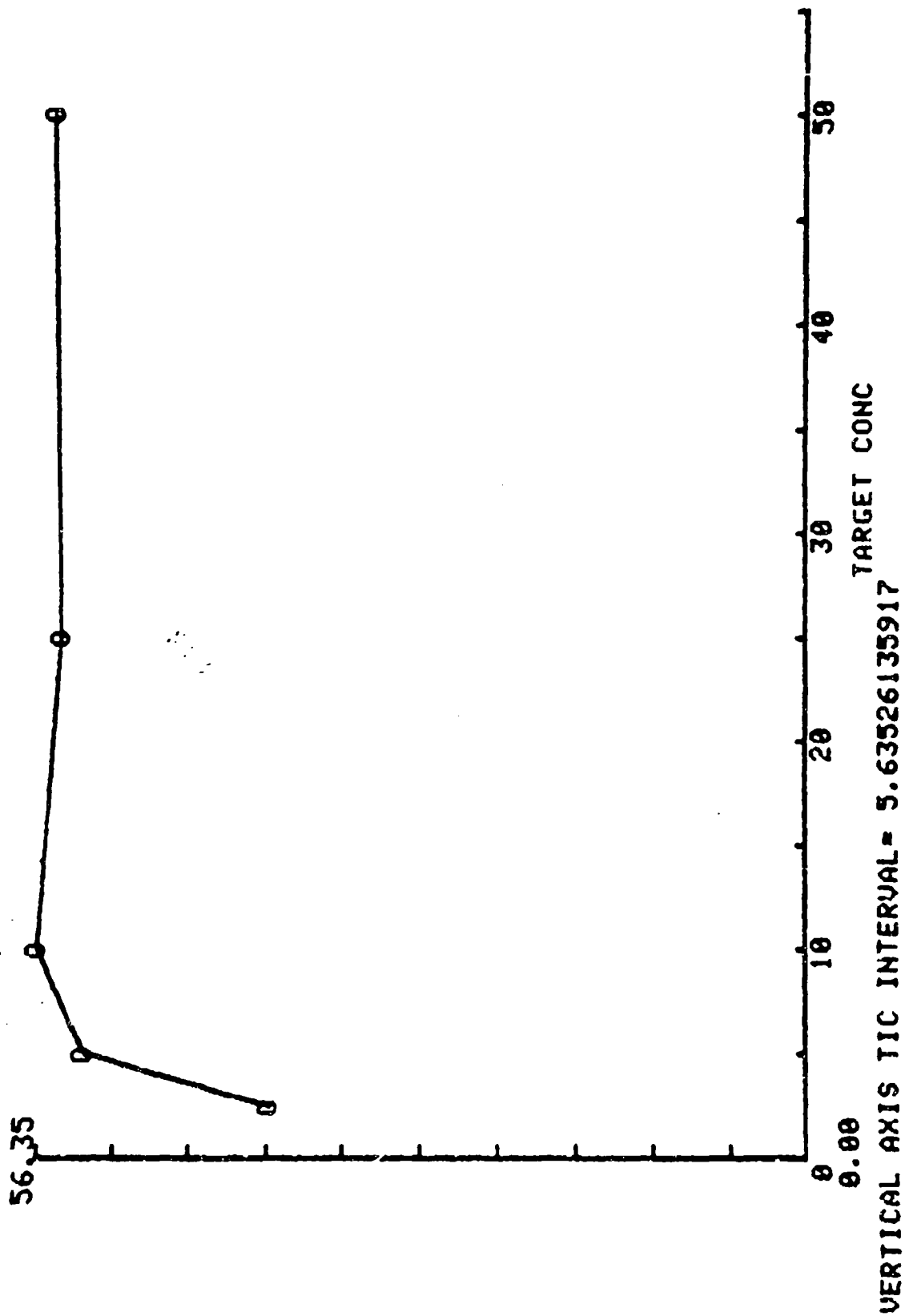
Figure 11-84. Tetryl on Concrete - Graph of Imprecision

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Table 11-86. Tetryl on Brick - Target vs. Found
Concentrations

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	2.210 1.280 0.620 0.060
5.000	2.300 6.050 3.910 0.600
10.000	9.340 6.520 8.060 2.560
25.000	24.170 17.540 17.820 11.820
50.000	41.510 41.820 30.920 28.310

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 12.471   SD= 13.2681609086

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.21259101941
SLOPE= 0.685599514563
  USE FOR ACCURACY
R= 0.931916945925
MEAN SQR DEV OF POINTS FROM REGRESSION= 24.441622711
ST ERROR EST= 4.94384695465
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096400
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 8.80073814918
x(d)= 26.0154833108

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Figure 11-35. Tetryl on Brick — Graph of Target-Found Concentration Points

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Table 11-88. Tetryl on Brick – Inaccuracy and
Imprecision Data

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.043	0.924	-58.300	88.667
5.000	3.215	2.323	-35.700	72.270
10.000	6.620	2.942	-33.800	44.441
25.000	17.838	5.046	-28.650	28.291
50.000	33.640	10.230	-32.720	30.409
Means		4.293	-37.834	52.816

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 2.965
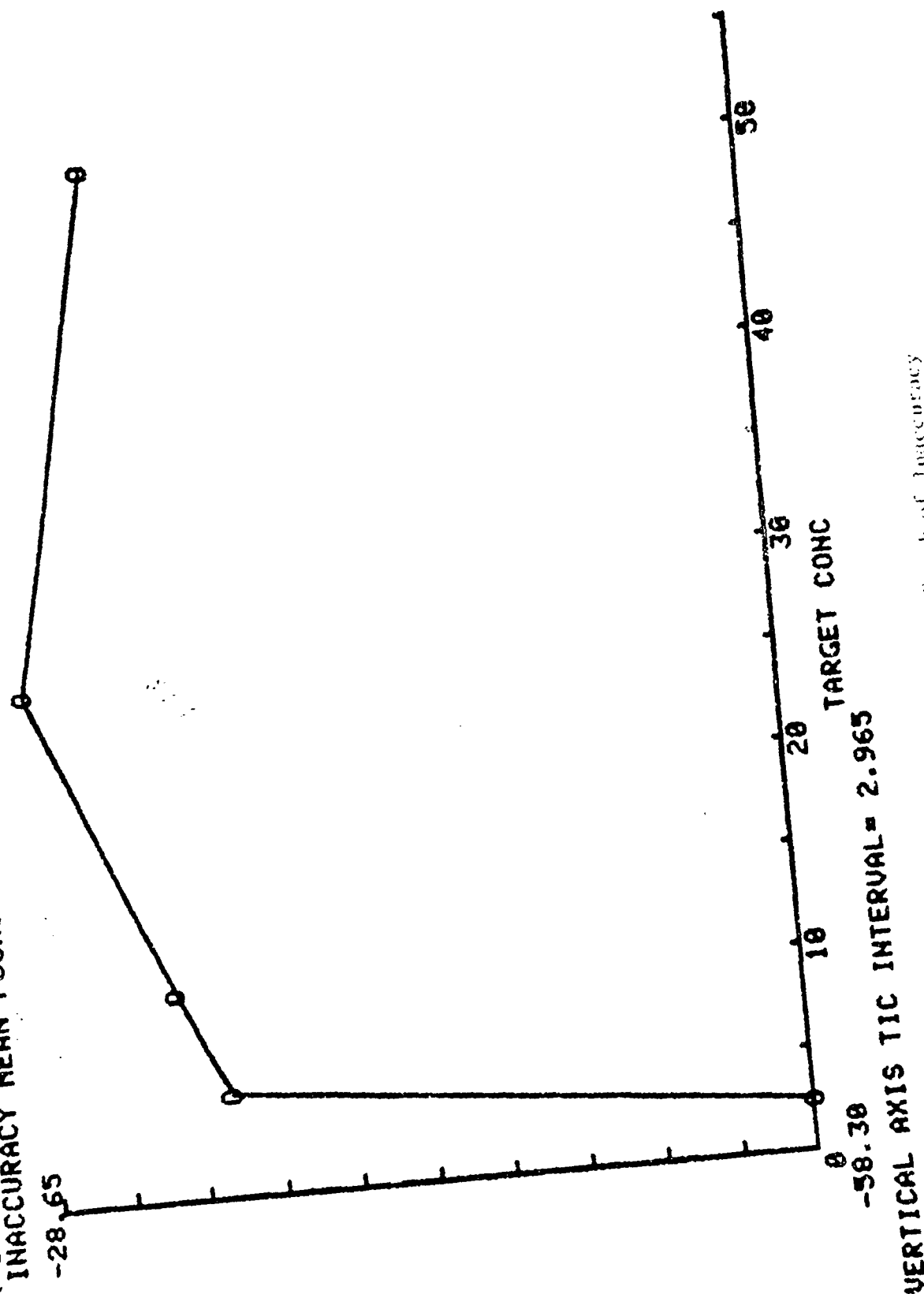
Figure 11-86. Tetryl on Brick - Graph of Inaccuracy

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)
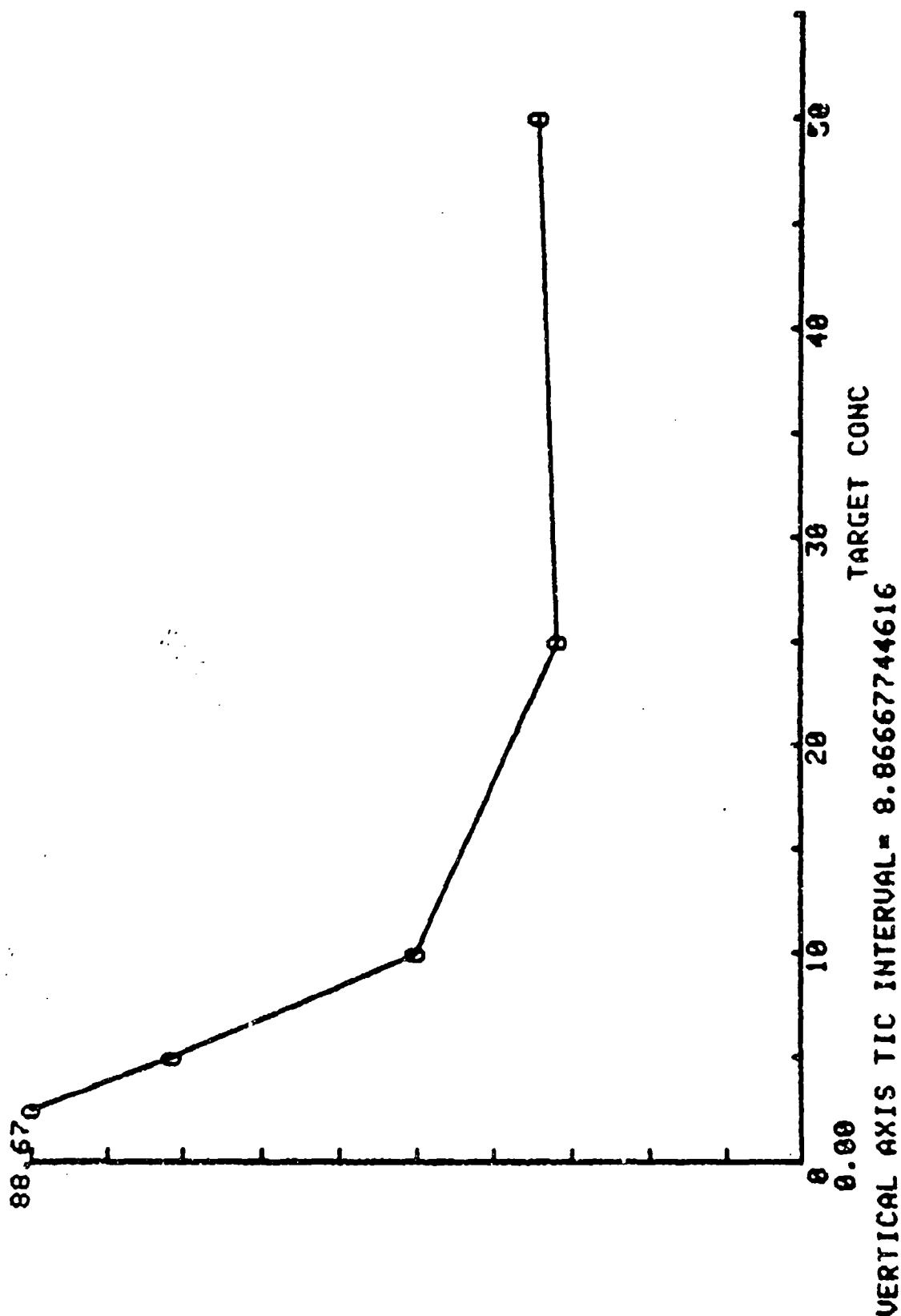
Figure 11-S7. Tetryl on Brick - Graph of Imprecision

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 8.8666744616

88.67

0.00

8

10

20

30

40

50

Table 11-89. Tetryl on Transite - Target vs. Found Concentrations

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
TARGET CONC. vs FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
2.500	0.950
	1.340
	0.140
	0.170
5.000	1.460
	3.080
	0.540
	0.450
10.000	2.670
	7.850
	2.640
	0.900
25.000	6.880
	22.300
	9.080
	4.300
50.000	12.710
	40.460
	21.230
	35.070

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC JINTS

TARGET CONC
MEAN= 18.5   SD= 18.8350535872

FOUND CONC
MEAN= 8.711   SD= 11.9174652462

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -1.7339563106B
SLOPE= 0.5645922330 1
  USE FOR ACCURACY
R= 0.854414170035
MEAN SQR DEV OF POINTS FROM REGRESSION= 40.4738695793
ST ERROR EST= 6.36190769968
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 9.86469728103
x(d)= 41.3547106 17

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
FOUND CONC
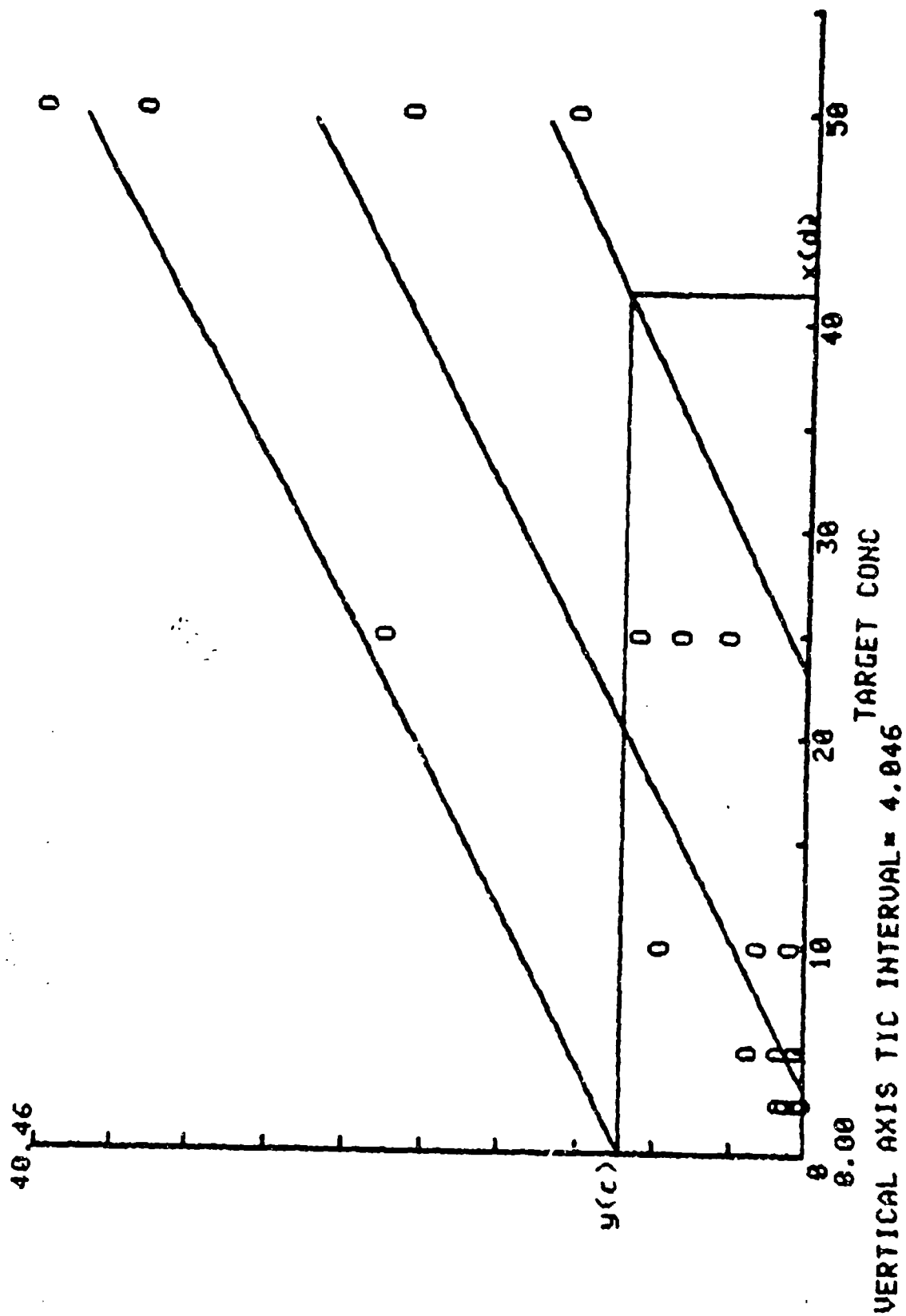
Figure 11-88. Tetryl on Transite — Graph of Target-
Found Concentration Points

VERTICAL AXIS TIC INTERVAL= 4.046

TARGET CONC

Table 11-91. Tetryl on Transite — Inaccuracy and Imprecision Data

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Conc ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	0.650	0.593	-74.000	91.382
5.000	1.383	1.220	-72.350	88.262
10.000	3.515	3.006	-64.850	85.522
25.000	10.640	8.015	-57.440	75.329
50.000	27.368	12.692	-45.265	46.376
Means		5.105	-62.781	77.358

2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

-45.27

-74.00

VERTICAL AXIS TIC INTERVAL= 2.8735

TARGET CONC

Figure 11-89. Tetryl on Transite – Graph of Inaccuracy

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2,4,6-TRINITROPHENYLMETHYLNITRAMINE (TETRYL)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 9.13022161536
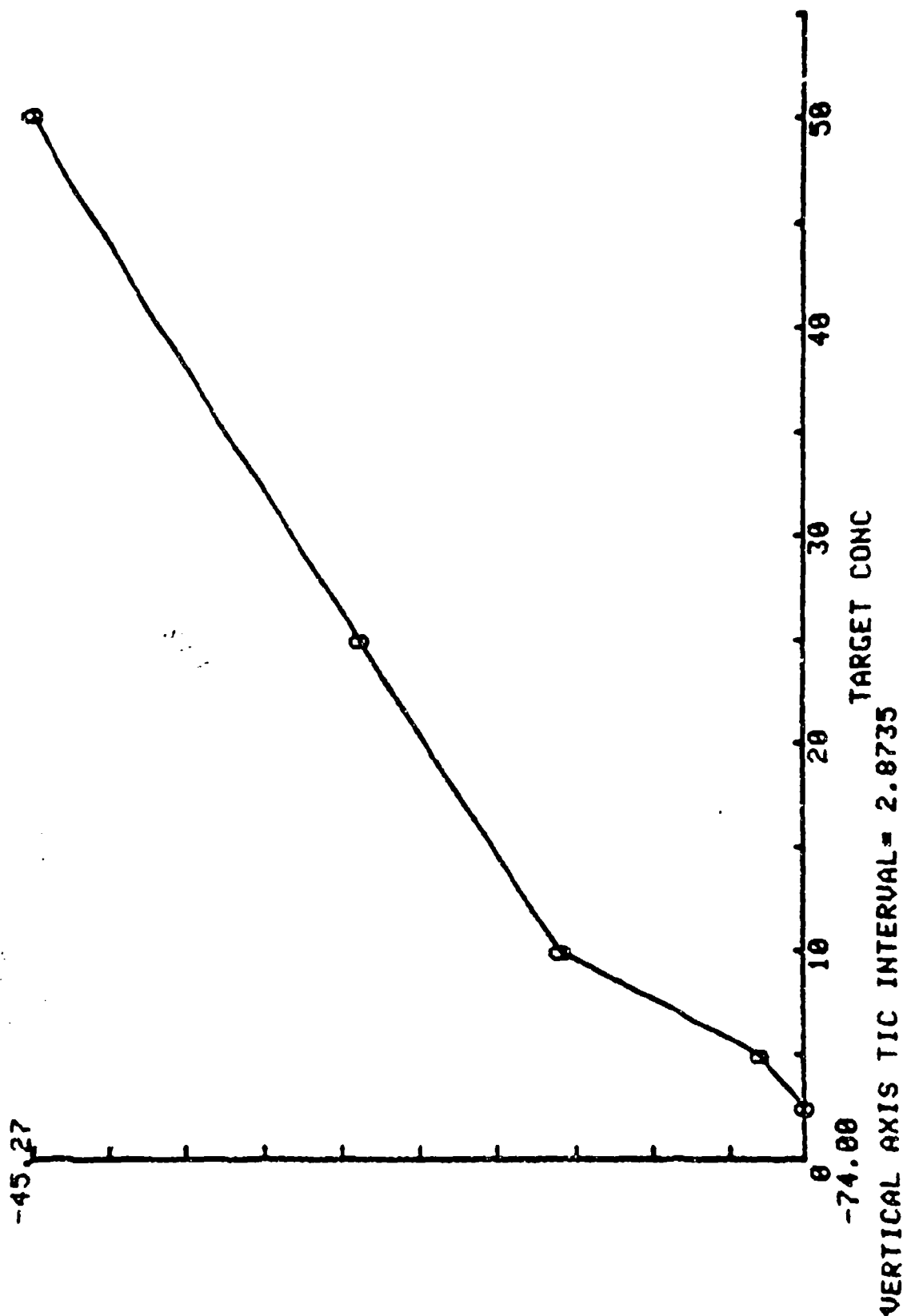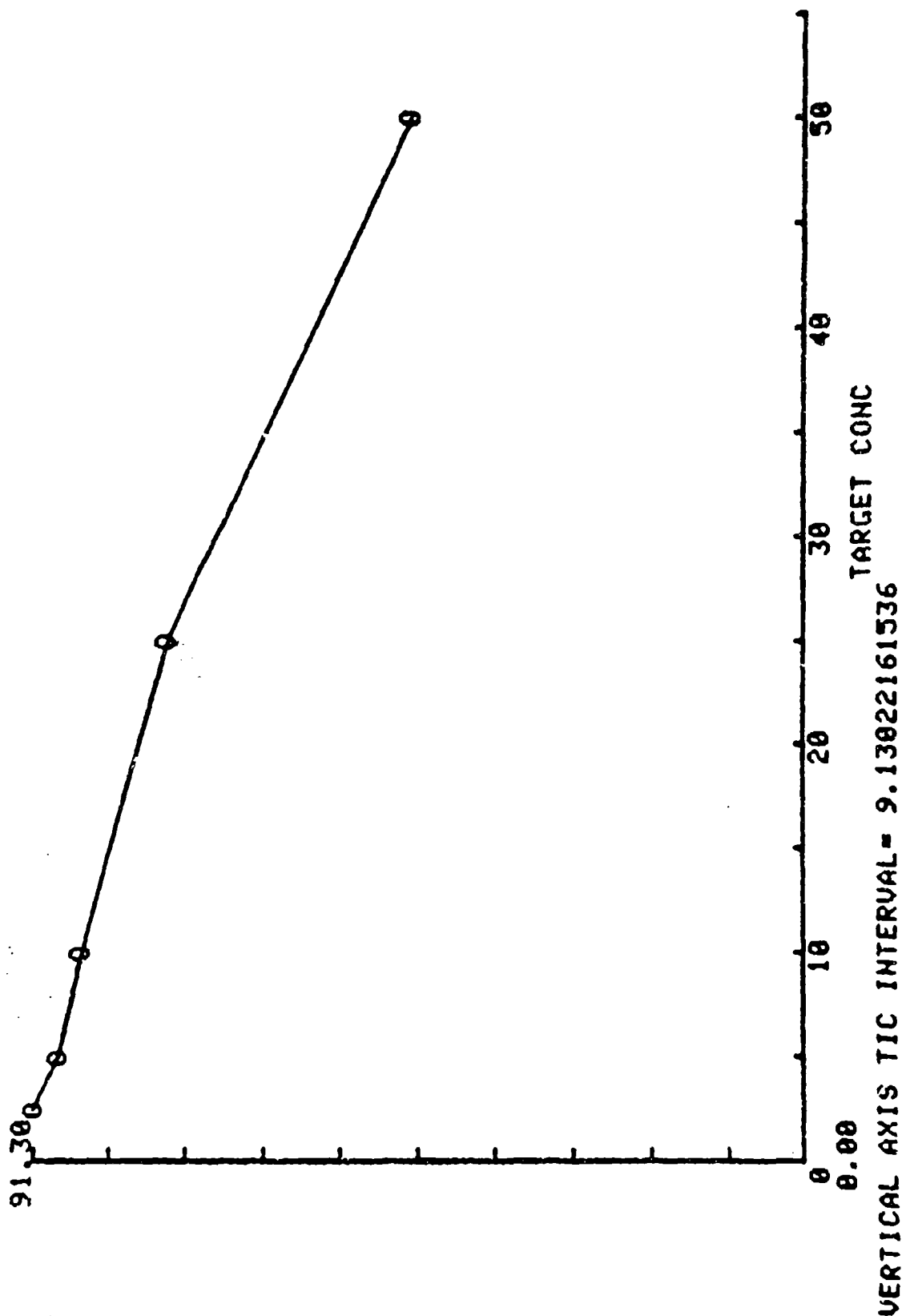
Figure 11-90. Tetryl on Transite – Graph of Imprecision

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Table 11-92. DPA on Metal – Target vs. Found Concentrations

DIPHENYLAMINE (DPA)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ng/ml	Found Conc ng/ml
2.500	2.850
	2.610
	2.560
	2.410
5.000	3.770
	5.070
	4.900
	4.720
10.000	9.520
	10.140
	10.270
	9.910
25.000	25.240
	25.420
	24.400
	21.800
50.000	49.370
	47.940
	47.220
	43.510

Table II-93. DPA on Metal – Analysis of Target-Found
Concentration Points

DIPHENYLAMINE (DPA)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 17.6455   SD= 17.802404621

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.253584142395
SLOPE= 0.940103559871
  USE FOR ACCURACY
R= 0.997201187585
MEAN SQR DEV OF POINTS FROM REGRESSION= 1.70567937344
ST ERROR EST= 1.30601660534
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 2.63463632131
x(d)= 5.03549506469

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DIPHENYLAMINE (DPA)
METAL SURFACE
FOUND CONC

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 4.937

Figure 11-9!. DPA on Metal - Graph of Target-Found
Concentration Points

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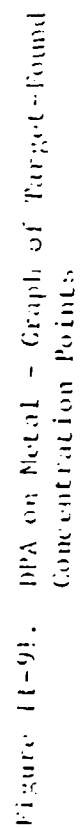
Table II-94. DPA on Metal -- Inaccuracy and
Imprecision Data

DIPHENYLAMINE (DPA)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.408	0.253	-3.700	18.510
5.000	4.635	0.595	-7.300	12.847
10.000	9.960	0.329	-0.400	3.303
25.000	24.215	1.670	-3.140	6.898
50.000	47.010	2.499	-5.980	5.315
Means		1.069	-4.104	7.774
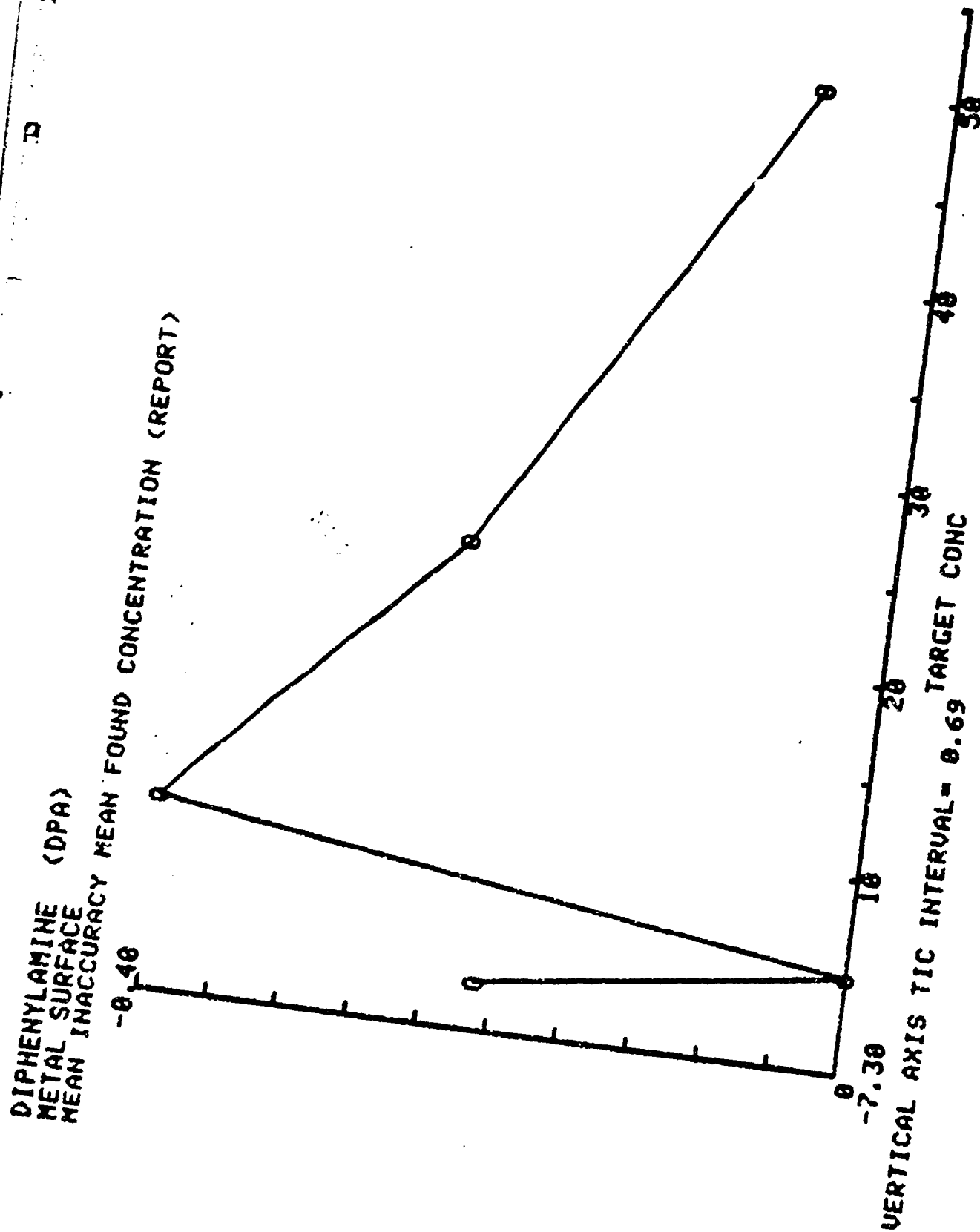
241

Figure 11-92. DPA on Metal — Graph of Inaccuracy

DIPHENYLAMINE (DPA)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 0.69 TARGET CONC

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DIPHENYLAMINE (DPA)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

12.85

0.00

VERTICAL AXIS TIC INTERVAL= 1.2846925741   TARGET CONC
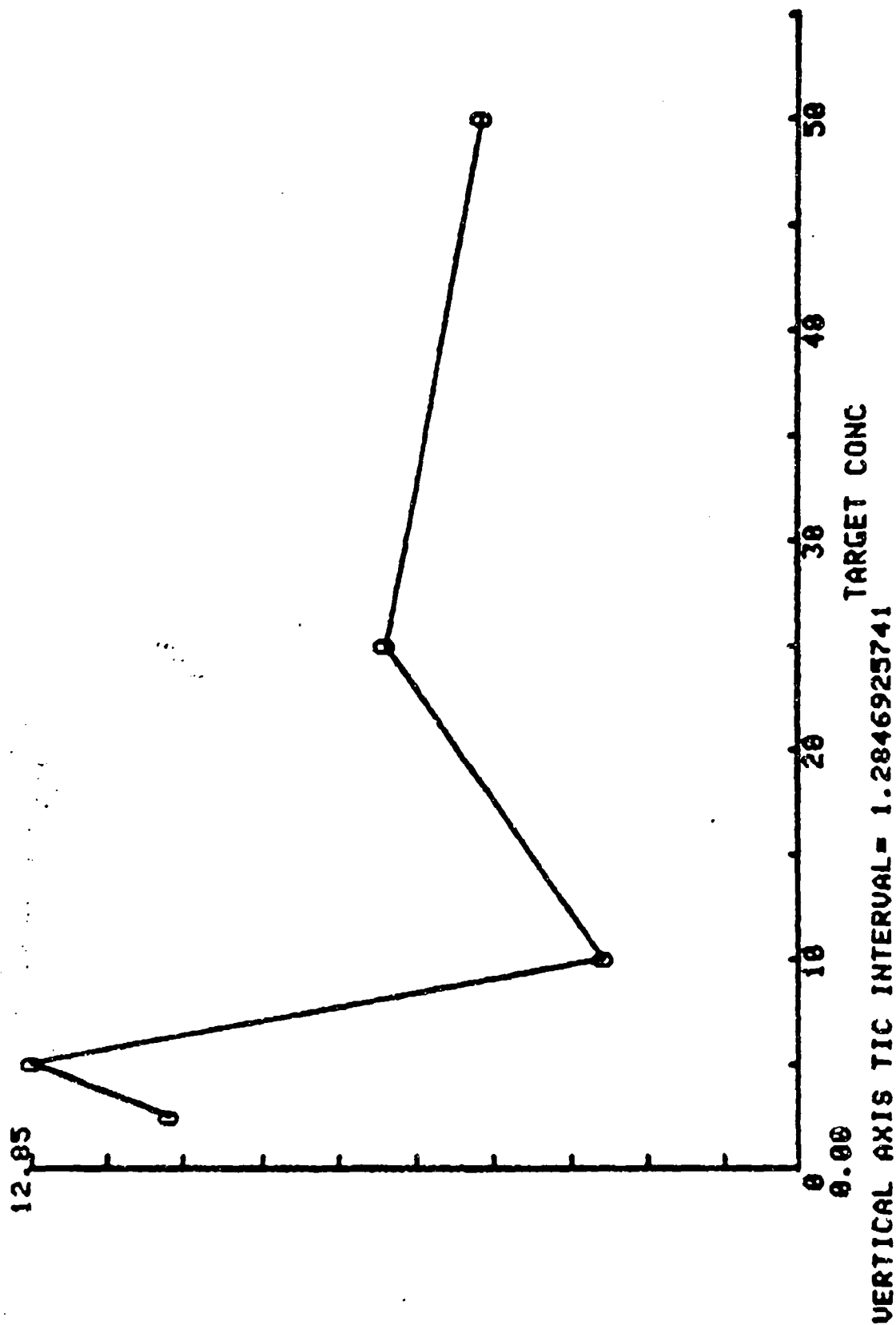
Figure 11-93.   DPA on Metal - Graph of Imprecision

Table 11-95. DPA on Concrete – Target vs. Found
Concentrations

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
TARGET CONC. US FOUND CONC.

Target Conc ng/ml	Found Conc ng/ml
2.500	2.010
	2.200
	1.720
	1.560
5.000	4.940
	4.130
	4.140
	2.950
10.000	5.300
	8.470
	7.470
	4.800
25.000	19.400
	21.100
	19.500
	9.750
50.000	35.410
	43.400
	47.400
	22.730

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DIPHENYLAMINE (DPA)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 13.431   SD= 14.2563485027

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.303319174757
SLOPE= 6.74239563108
  USE FOR ACCURACY
R= 0.939170713081
MEAN SQR DEV OF POINTS FROM REGRESSION= 25.3061729268
ST ERROR EST= 5.03052412049
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 8.86083467264
x(d)= 24.42662262877

245

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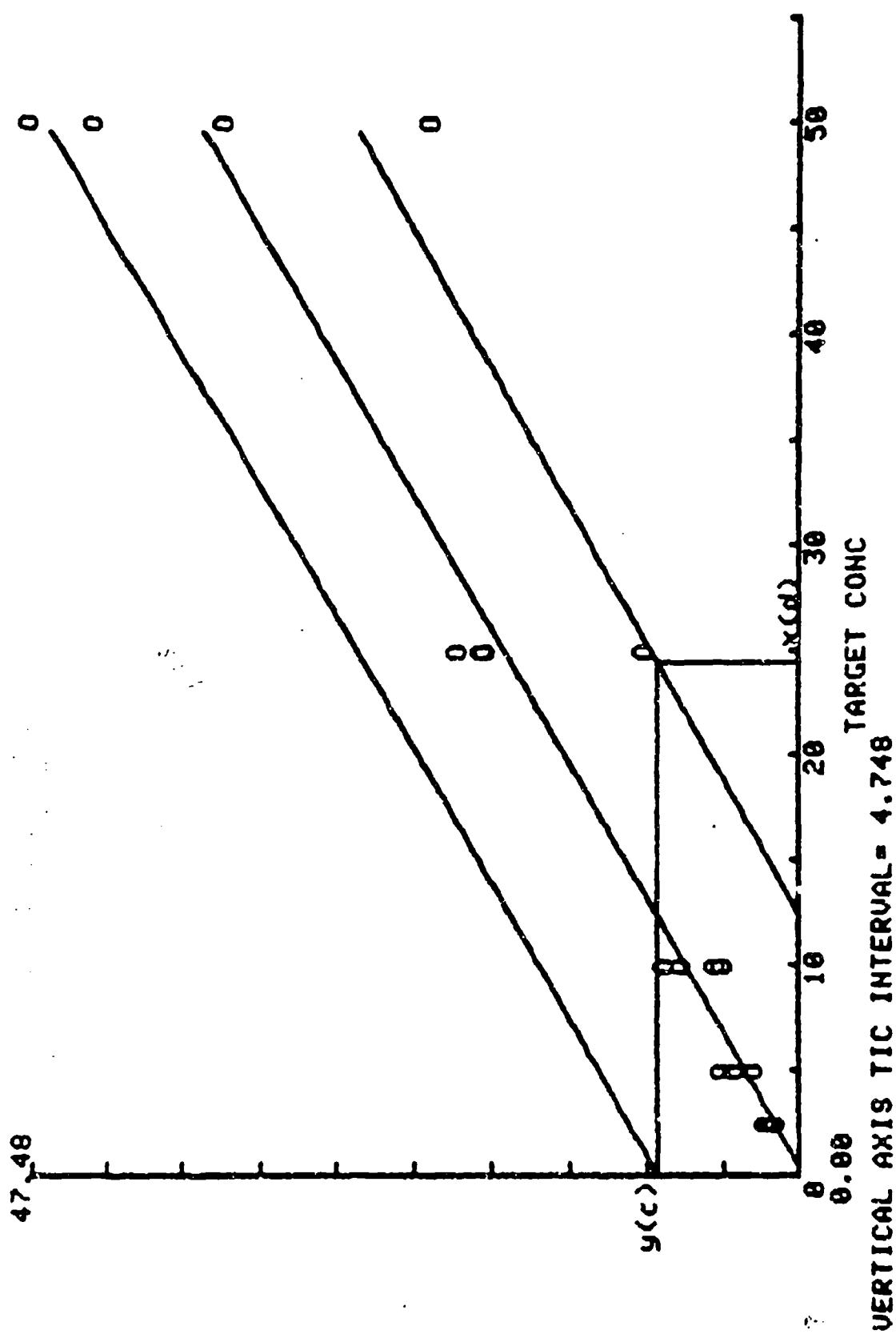
Figure 11-94. DPA on Concrete – Graph of Target–Found Concentration Points

Table 11-97. DPA on Concrete - Inaccuracy and Imprecision Data

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.873	0.287	-25.100	15.326
5.000	4.040	0.820	-19.200	20.292
10.000	6.530	1.721	-34.700	26.351
25.000	17.458	5.195	-30.170	29.756
50.000	37.255	18.904	-25.490	29.269
Means		3.785	-26.932	24.199

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL = 1.55   TARGET CONC

Figure 11-95. DPA on Concrete — Graph of Inaccuracy

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

29.76

0
0.00

VERTICAL AXIS TIC INTERVAL= 2.975570480851

TARGET CONC

10   20   30   40   50
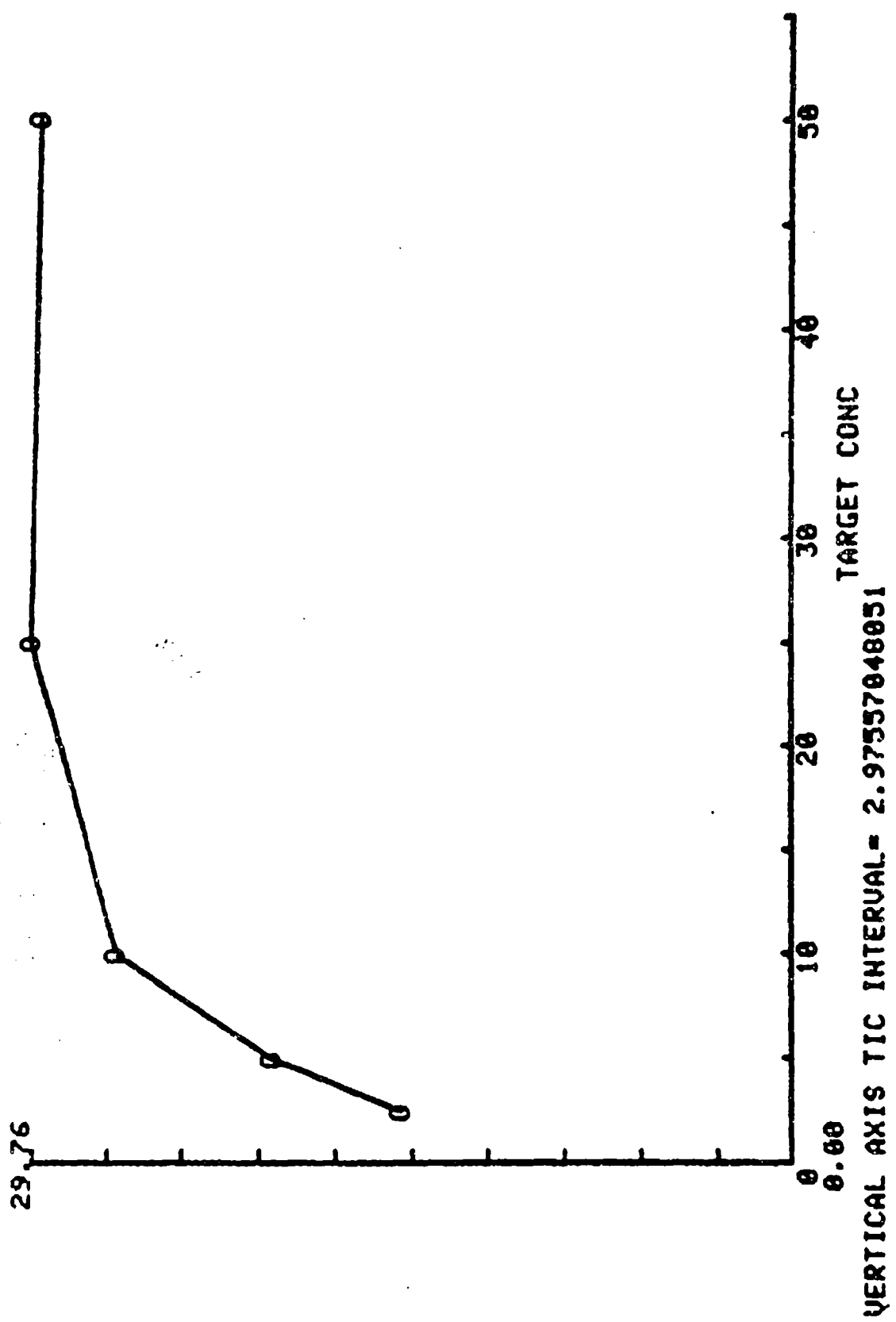
Figure 11-96. DPA on Concrete – Graph of Imprecision

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Table II-98. DPA on Concrete (3 days) — Target vs. Found Concentrations

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
TARGET CONC VS FOUND CONC

Target Conc ng/ml	Found Conc ng/ml
2.500	2.010
	2.200
	1.720
5.000	4.940
	4.130
	4.140
10.000	5.300
	8.470
	7.470
25.000	19.400
	21.100
	19.580
50.000	35.410
	43.400
	47.480

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 15.1166666667   SD= 15.5726285992

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.5091477788565
SLOPE= 0.8446386192D2
 USE FOR ACCURACY
R= 0.9868930839028
MEAN SQR DEV OF POINTS FROM REGRESSION= 6.8011848484773
ST ERROR EST= 2.6079003'3637
 USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.77093170942
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
 (EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 4.4230795194S
x(d)= 11.514528374

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
FOUND CONC

TARGET CONC

VERTICAL AXIS TIC INTERVAL = 4.748

Figure 11-97. DPA on Concrete (3 days) - Graph of Target-Found Concentration Points

Table 11-100. DPA on Concrete (3 days) – Inaccuracy
and Imprecision Data

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.977	0.242	-20.933	12.229
5.000	4.403	0.465	-11.933	10.556
10.000	7.080	1.621	-29.200	22.890
25.000	20.027	0.934	-19.893	4.663
50.000	42.097	6.140	-15.807	14.585
Means		1.880	-19.553	12.984

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.7266666667 TARGET CONC
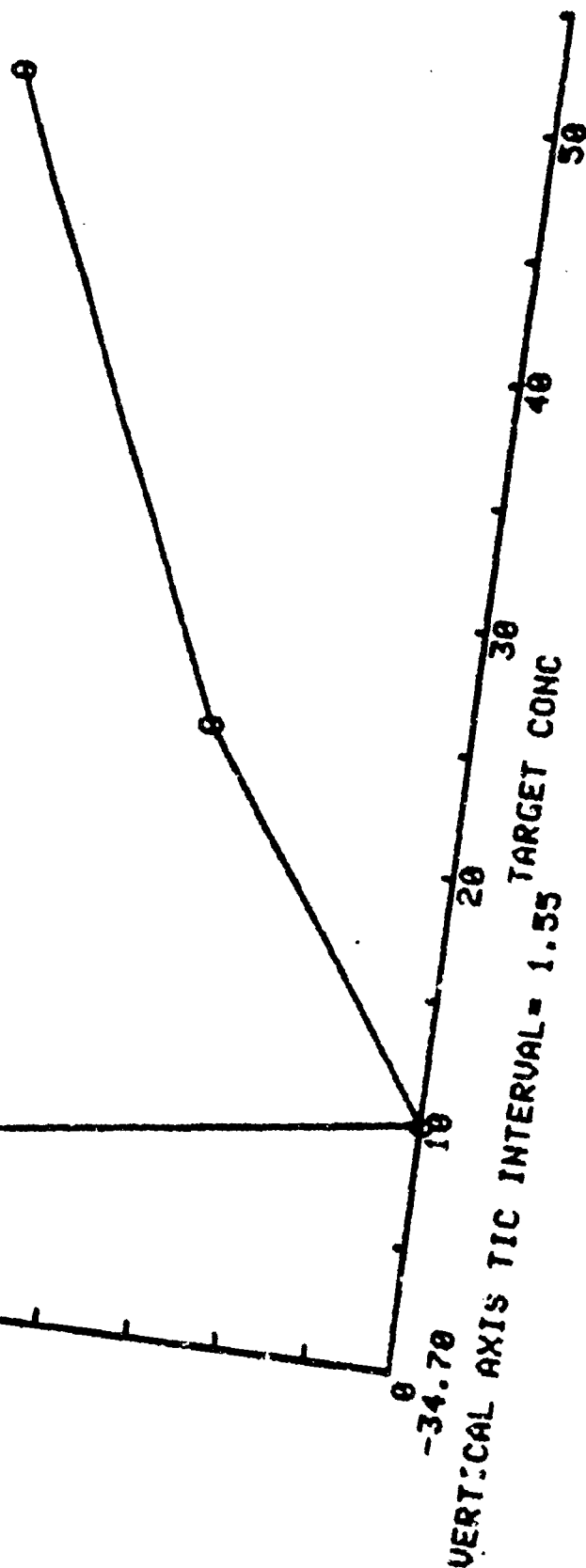
-11.93

10

-29.20

20

30

40

50
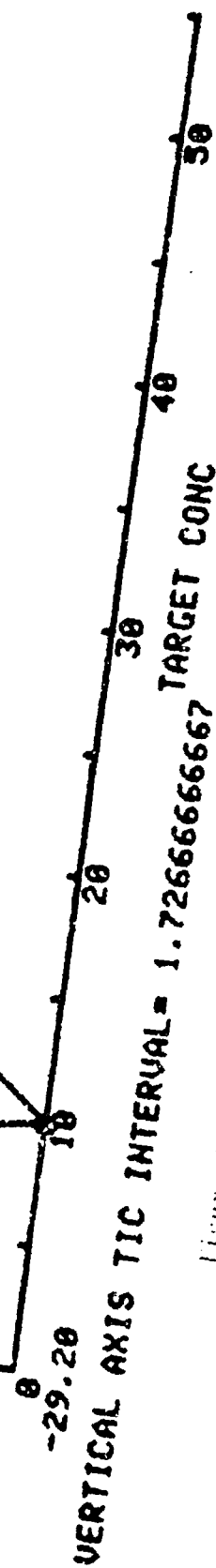
Figure 11-98. DPA on Concrete (3 days) — Graph of
Inaccuracy

DIPHENYLAMINE (DPA)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

22.89

0.00

VERTICAL AXIS TIC INTERVAL= 2.2889637I985

TARGET CONC

Figure 11-90. DPA on Concrete (3 days) — Graph of
Imprecision

255
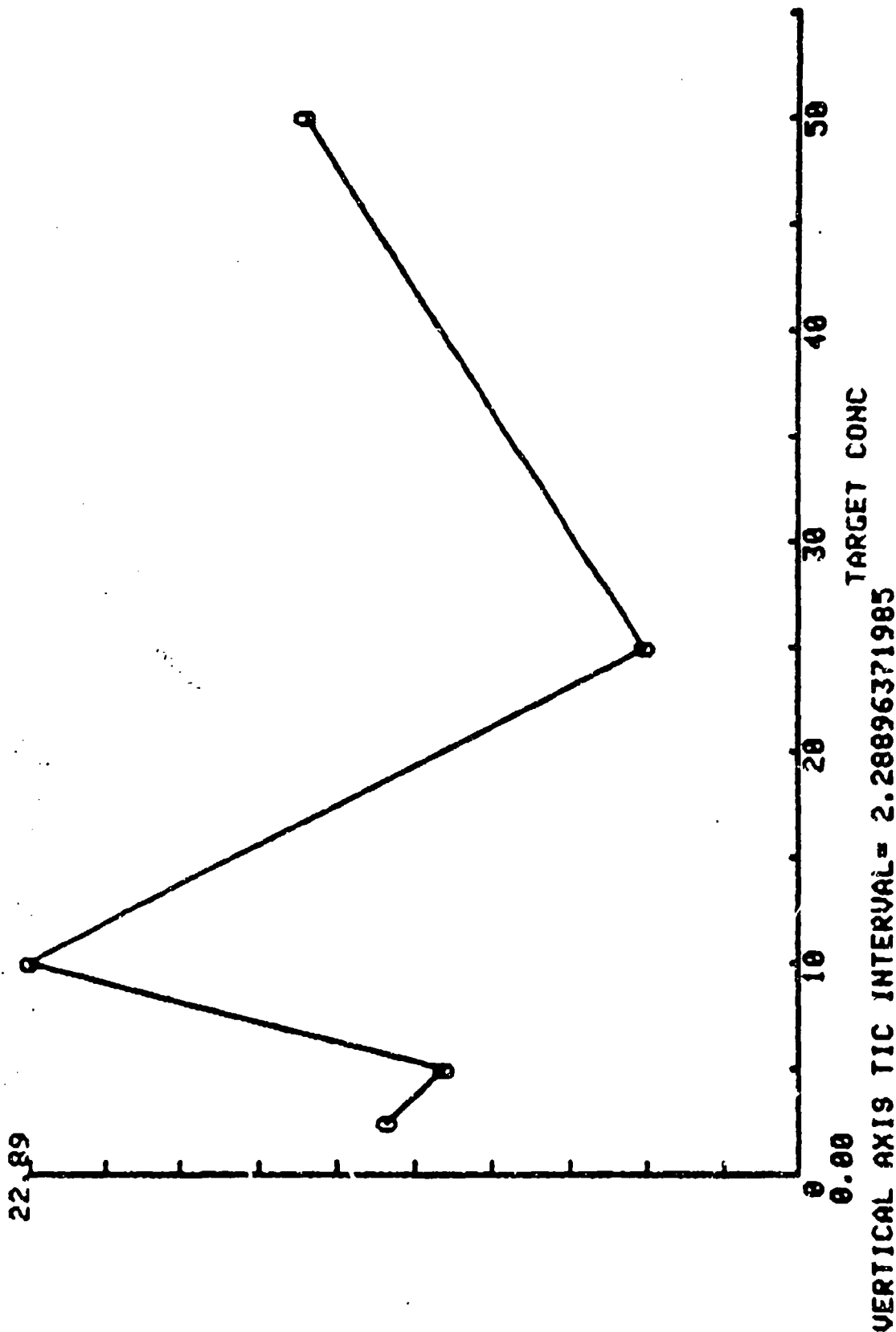
Table II-101. DPA on Brick - Target vs. Found
Concentrations

DIPHENYLAMINE (DPA)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ng/ml	Found Conc ng/ml
2.500	1.920
	2.180
	1.710
	2.200
5.000	2.260
	4.950
	4.550
	4.750
10.000	7.900
	7.060
	7.890
	8.260
25.000	22.000
	15.150
	13.180
	16.430
50.000	35.990
	44.510
	23.090
	38.060

DIPHENYLAMINE (DPA)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 13.246   SD= 13.1338996494

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.415277718356
SLOPE= 0.693552588997
   USE FOR ACCURACY
R= 0.952364373267
MEAN SQR DEV OF POINTS FROM REGRESSION= 16.9340657172
ST ERROR EST= 4.11510215148
   USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
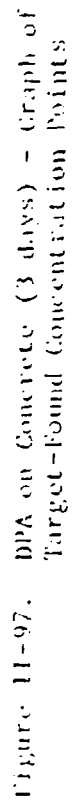MEASURED 1 TIME(S))
y(c)= 7.91768779587
x(d)= 21.3669545558

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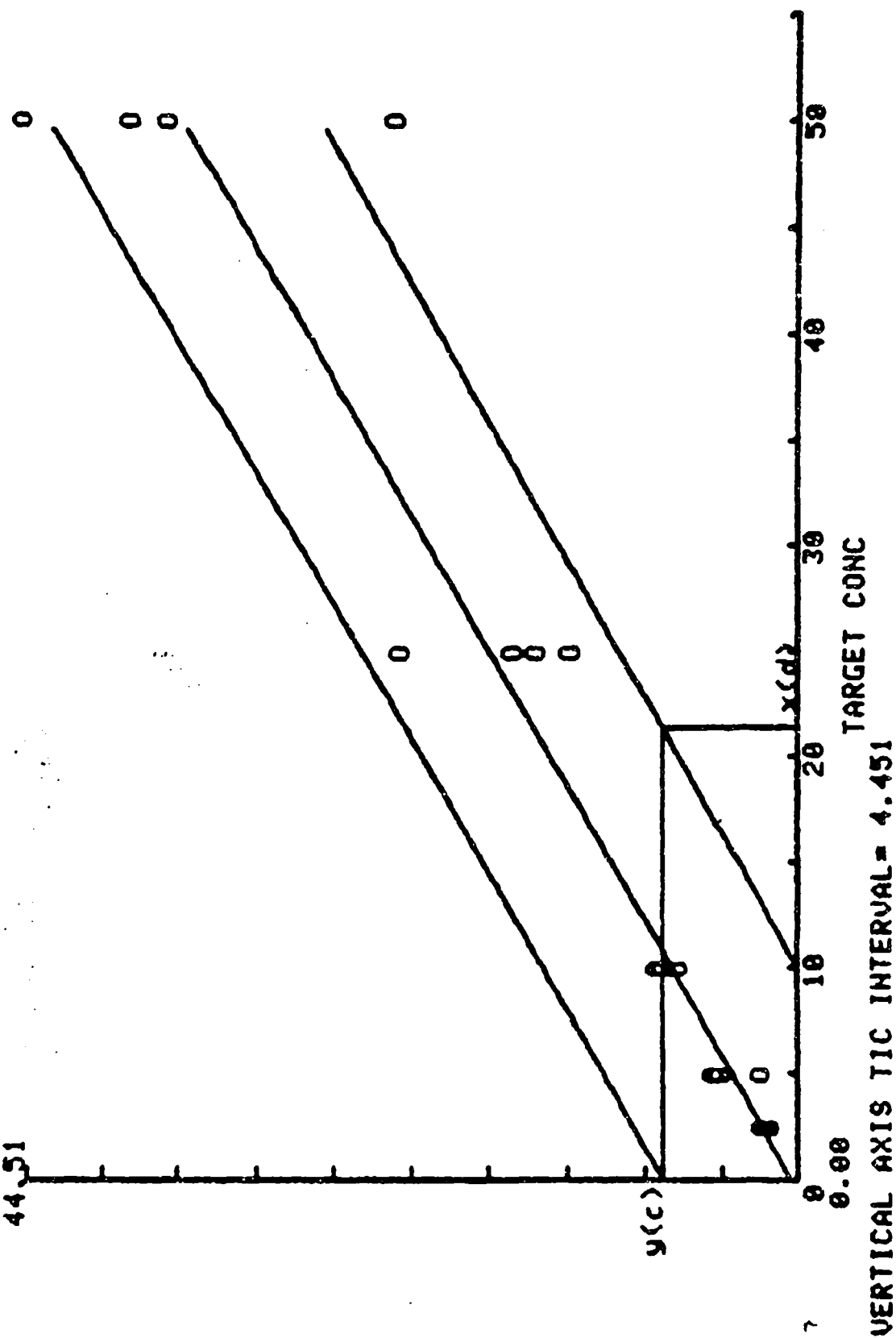
Figure 11-10a. DPA on Brick – Graph of Target-Found Concentration Points

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Table 11-103. DPA on Brick - Inaccuracy and Imprecision Data

DIPHENYLAMINE (DPA)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	2.003	0.233	-19.900	11.636
5.000	4.128	1.256	-17.450	36.422
10.000	7.778	0.508	-22.225	6.536
25.000	16.910	4.198	-32.360	24.828
50.000	35.413	8.981	-29.175	25.368
Means		3.835	-24.222	19.756

DIPHENYLAMINE (DPA)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL = 1.491
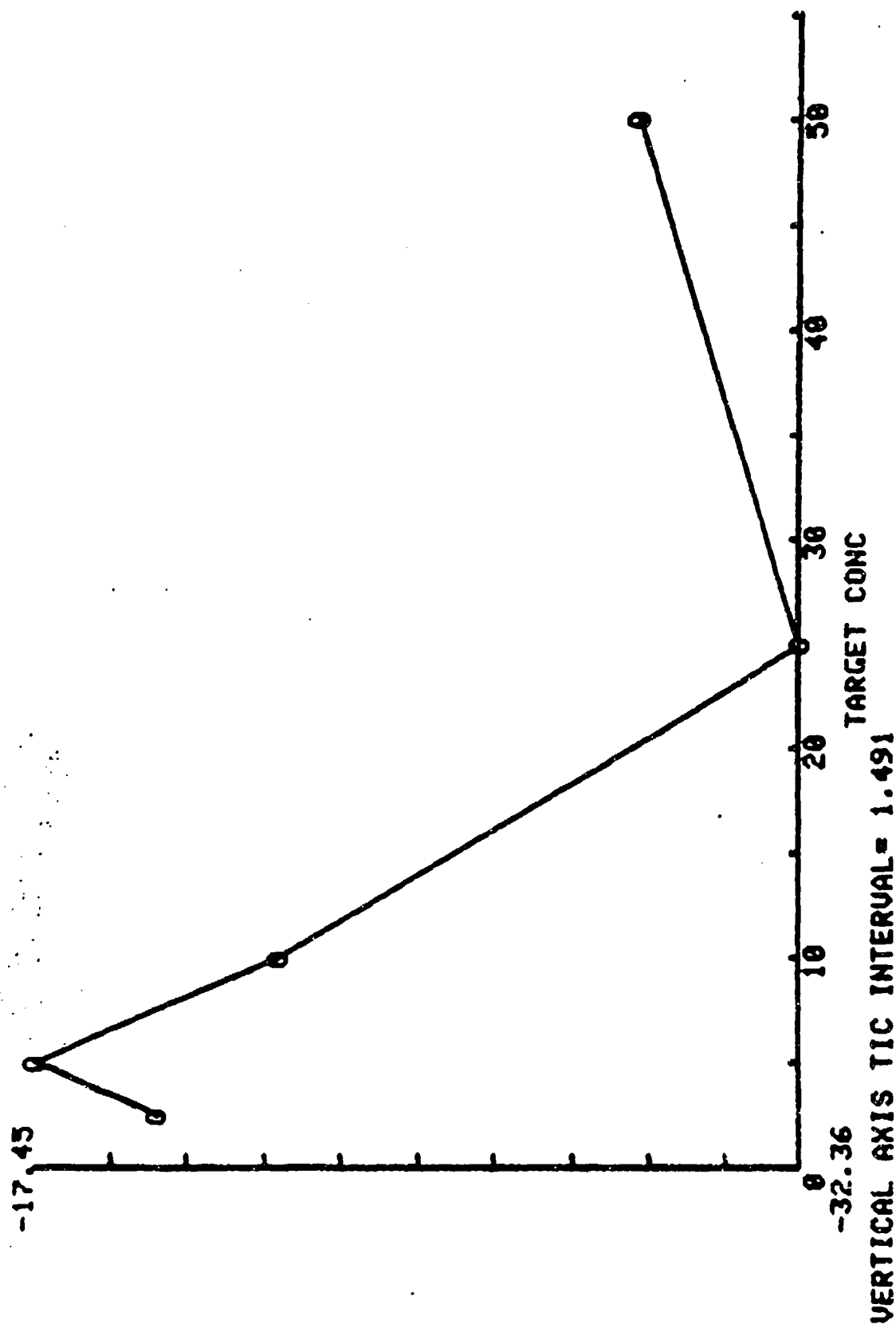
Figure 11-101. DPA on Brick — Graph of Inaccuracy

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DIPHENYLAMINE (DPA)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 3.8421897881 TARGET CONC
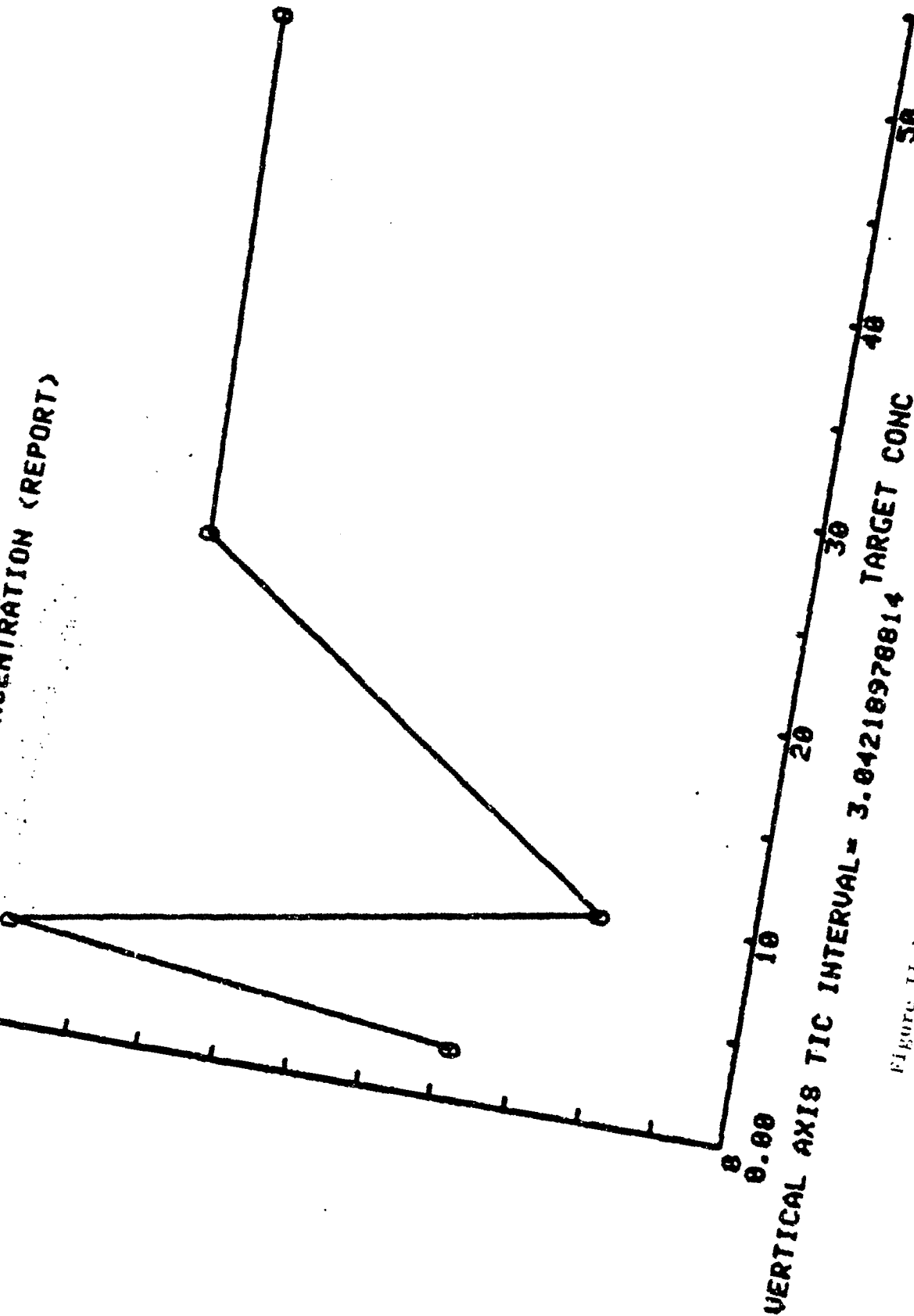
Figure II-102. DPA on Brick - Graph of Imprecision

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Table II-104. DPA on Transite - Target vs. Found Concentrations

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ng/ml	Found Conc ng/ml
2.500	0.810
	1.490
	1.800
	1.740
5.000	1.320
	4.640
	4.740
	3.910
10.000	2.840
	9.790
	9.030
	7.970
25.000	7.550
	18.970
	21.120
	17.340
50.000	11.650
	45.170
	37.090
	41.580

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DIPHENYLAMINE (DPA)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.0350535872

FOUND CONC
MEAN= 12.5315   SD= 13.8086106908

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.1188531553
SLOPE= 0.679953883495
USE FOR ACCURACY
R= 0.876314751306
MEAN SQR DEV OF POINTS FROM REGRESSION= 46.7094406587
ST ERROR EST= 6.83443052922
USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 12.5789824038
x(d)= 37.1498438551
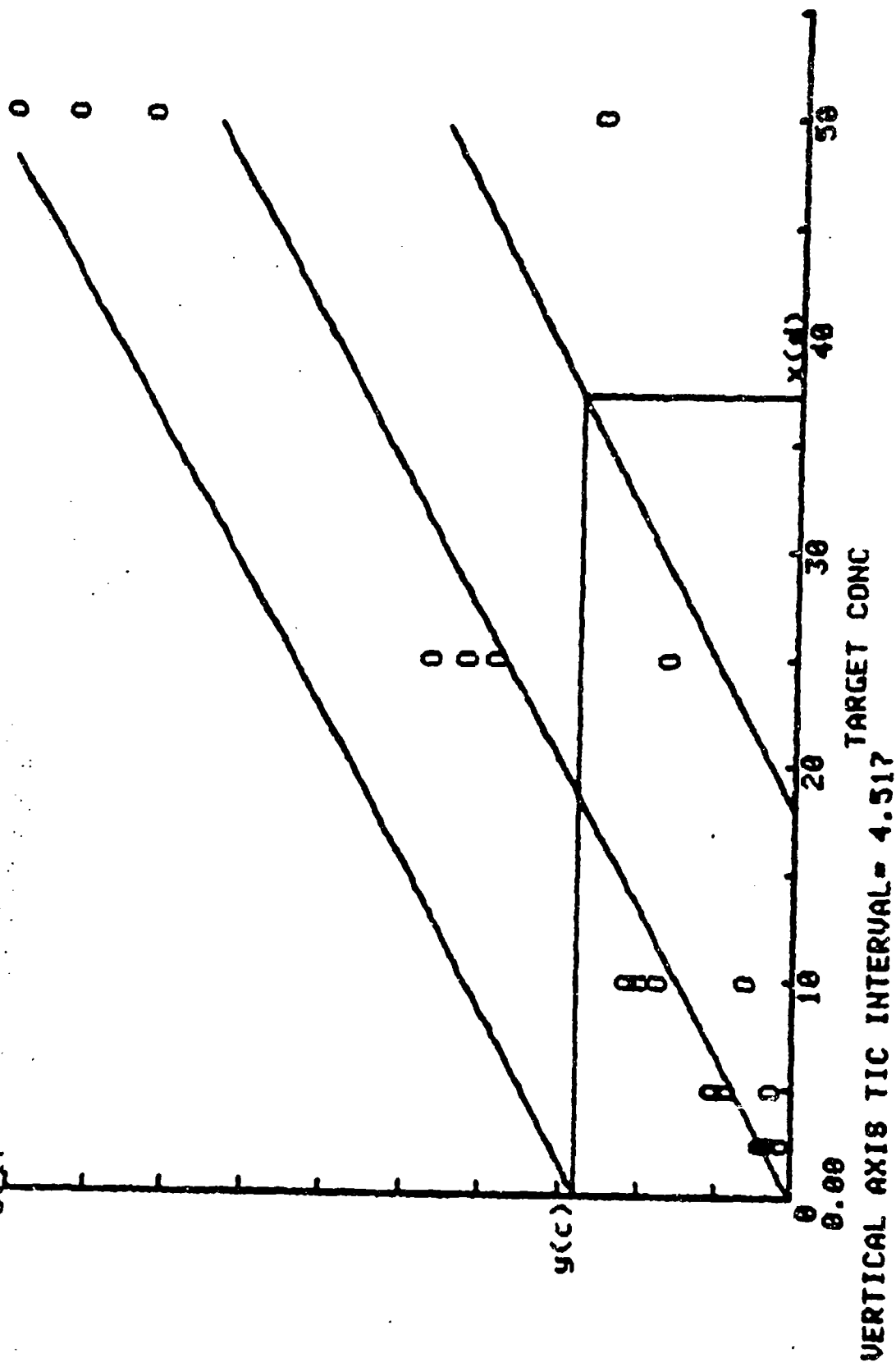
Figure 11-103. DPA on Transite – Graph of Target-Found
Concentration Points

Table II-106. DPA on Transite – Inaccuracy and Imprecision Data

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.480	8.475	-40.800	32.088
5.000	3.653	1.598	-26.950	43.762
10.000	7.408	3.135	-25.925	42.324
25.000	16.245	6.000	-35.020	36.933
50.000	33.873	15.179	-32.253	44.813
Means		5.278	-32.190	39.984

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DIPHENYLAMINE (DPA)
TRANSITE SURFACE MEAN FOUND CONCENTRATION (REPORT)
MEAN INACCURACY

Figure D-104.   DPA on Transite - Graph of Inaccuracy

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DIPHENYLAMINE (DPA)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 4.4812965610日

Figure II-105. DPA on Transite — Graph of Imprecision

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Table 11-107. DPA on Transite (3 days) – Target vs. Found Concentrations

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ng/ml	Found Conc ng/ml
2.500	1.490 1.880 1.740
5.000	4.640 4.740 3.910
10.000	9.790 9.030 7.970
25.000	18.970 21.120 17.340
50.000	45.170 37.090 41.580

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Table 11-108. DPA on Transite (3 days) – Target vs. Found Concentrations

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
ANALYSIS OF 15 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 18.5   SD= 18.1953683274

FOUND CONC
MEAN= 15.0973333333   SD= 14.9797851723

NO. RUNS 1 TOTAL X-Y ALL RUNS 15 NO. CONCENTR 15
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -0.0114590007551
SLOPE= 0.8166914778886
  USE FOR ACCURACY
R= 0.9920036955584
MEAN SQR DEV OF POINTS FROM REGRESSION= 3.8492428574S
ST ERROR EST= 1.96194873976
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 13
TWO TAIL P LEVEL IS .1
t= 1.7709317894
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
(EACH TARGET CONC CONSIDERED INDEP SAMPLE
MEASURED 1 TIME(S))
y(c)= 3.69909237891
x(d)= 8.9773697920 2

Figure II-106. DPA on Transite (3 days) - Graph of Target-Found Concentration Points

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Table 11-109. DPA on Transite (3 days) — Inaccuracy and
Imprecision Data

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ng/ml	Mn Found Conc ng/ml	Standard Deviation	Mean Pct Inaccuracy	Imprecision
2.500	1.703	0.190	-31.867	11.599
5.000	4.430	0.453	-11.400	10.228
10.000	8.930	0.914	-10.700	10.236
25.000	19.143	1.896	-23.427	9.904
50.000	41.280	4.848	-17.440	9.807
Means		1.582	-18.967	10.355

DIPHENYLAMINE (DPA)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)
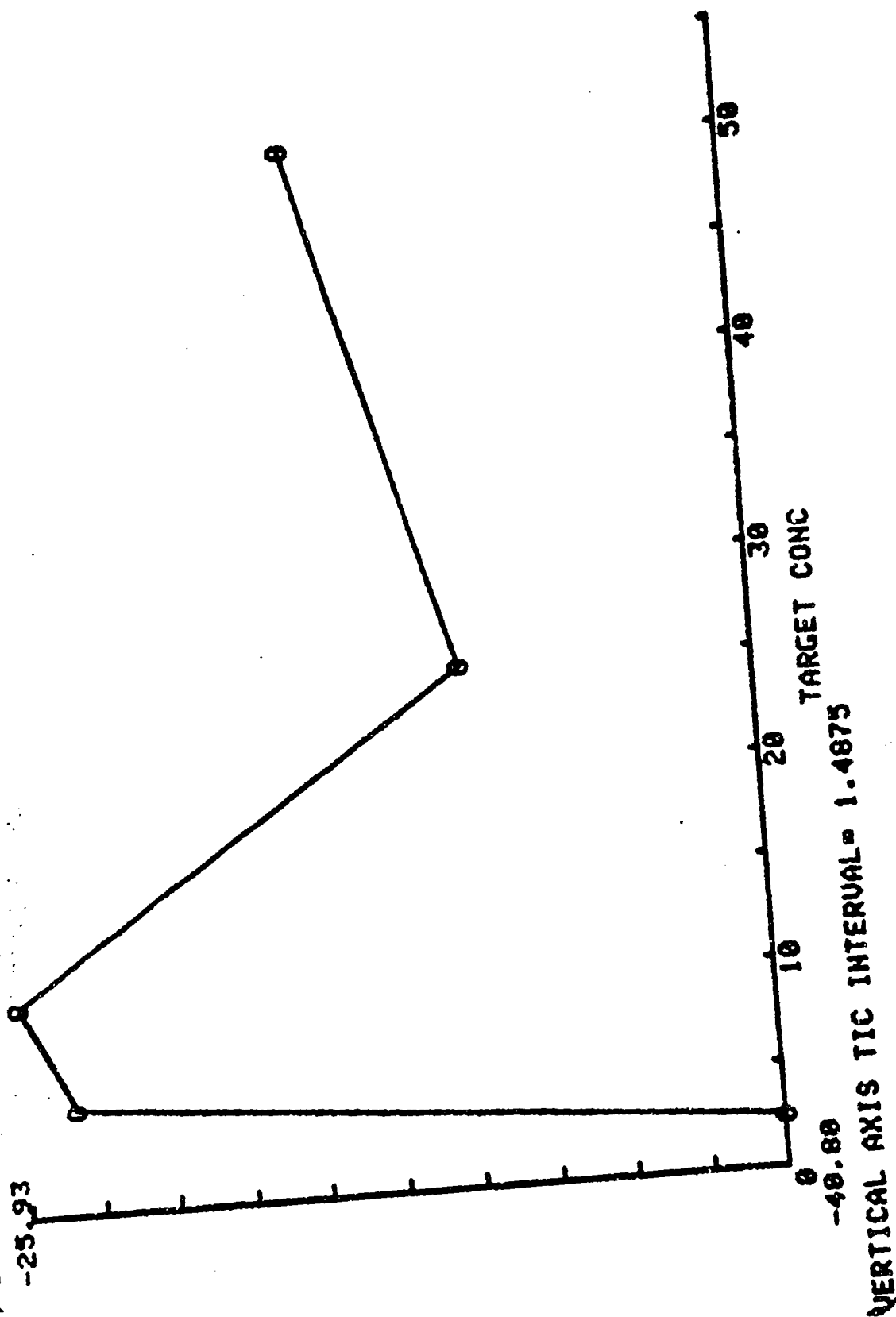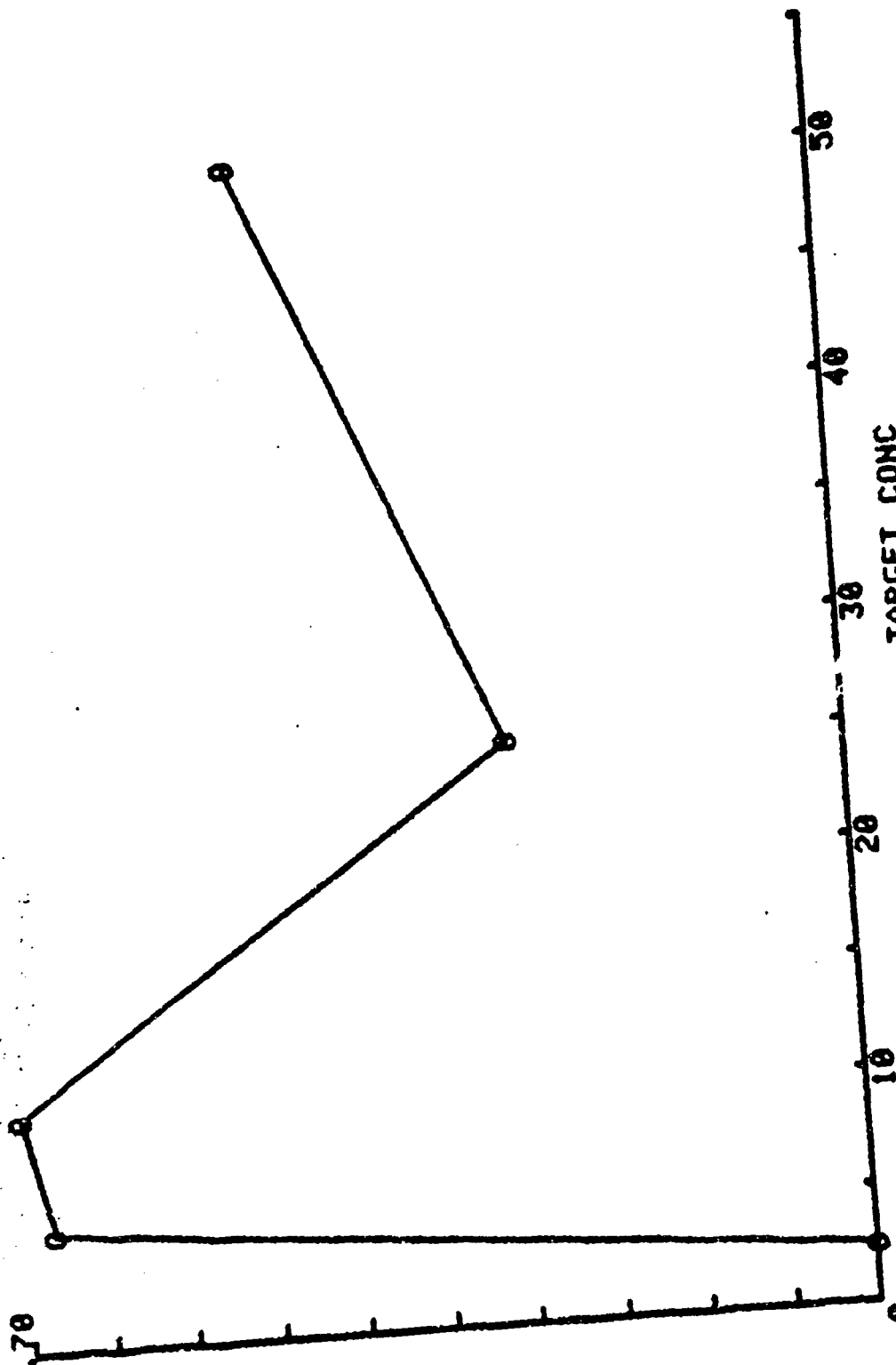
TARGET CONC

VERTICAL AXIS TIC INTERVAL= 2.1166666667

Figure II-107. DPA on Transite (3 days) – Graph of Inaccuracy

DIPHENYLAMINE (DPA)
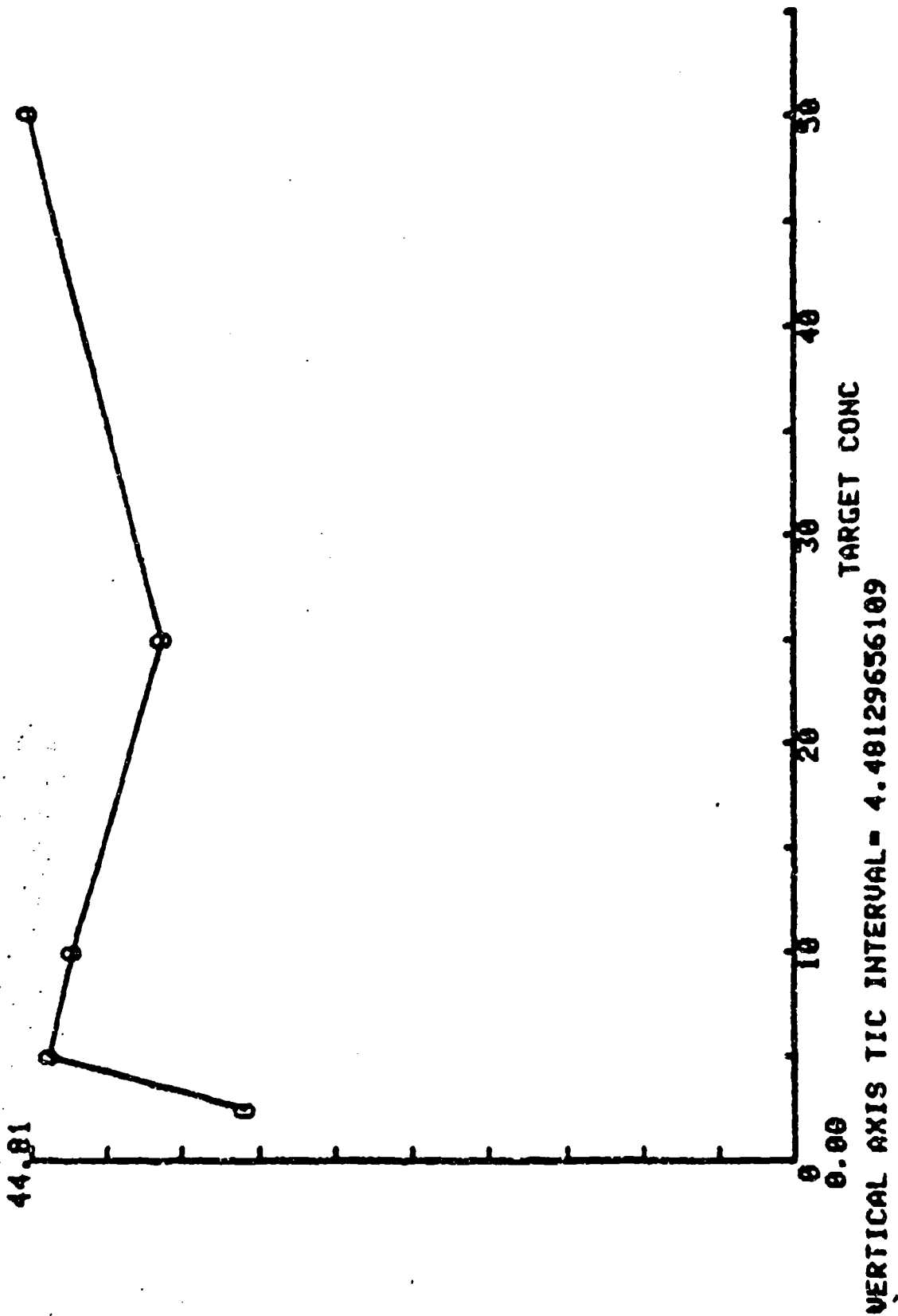TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.15989366849   TARGET CONC
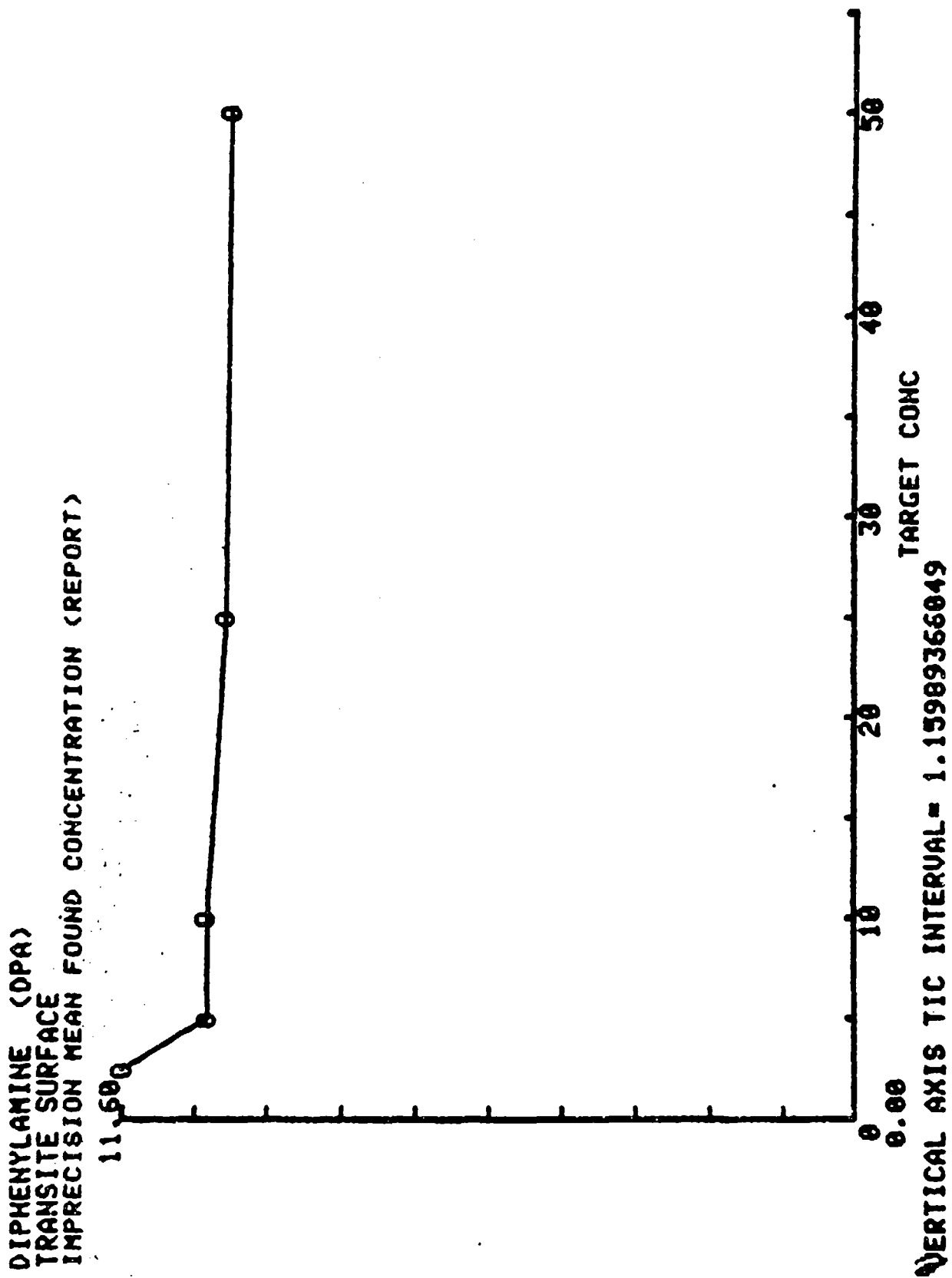
Figure 11-108.   DPA on Transite (3 days) – Graph of
Imprecision

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Table II-110. 2,6-DNT on Metal – Target vs. Found
Concentrations

2,6-DINITROTOLUENE (26DNT)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
10.000	9.550 7.500 11.350 10.500
20.000	19.000 21.000 22.500 19.300
40.000	29.000 39.900 40.000 37.100
100.000	86.700 97.000 95.900 93.600
200.000	168.000 208.000 192.000 189.000

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2,6-DINITROTOLUENE (26DNT)
METAL SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 74   SD= 72.148214349

FOUND CONC
MEAN= 69.845   SD= 68.3900825759

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.885032323624595
SLOPE= 0.942702265372
  USE FOR ACCURACY
R= 0.9943948147l2
MEAN SQR DEV OF POINTS FROM REGRESSION= 55.1918252689
ST ERROR EST= 7.42986624421
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 13.6292662533
x(d)= 28.5092514656
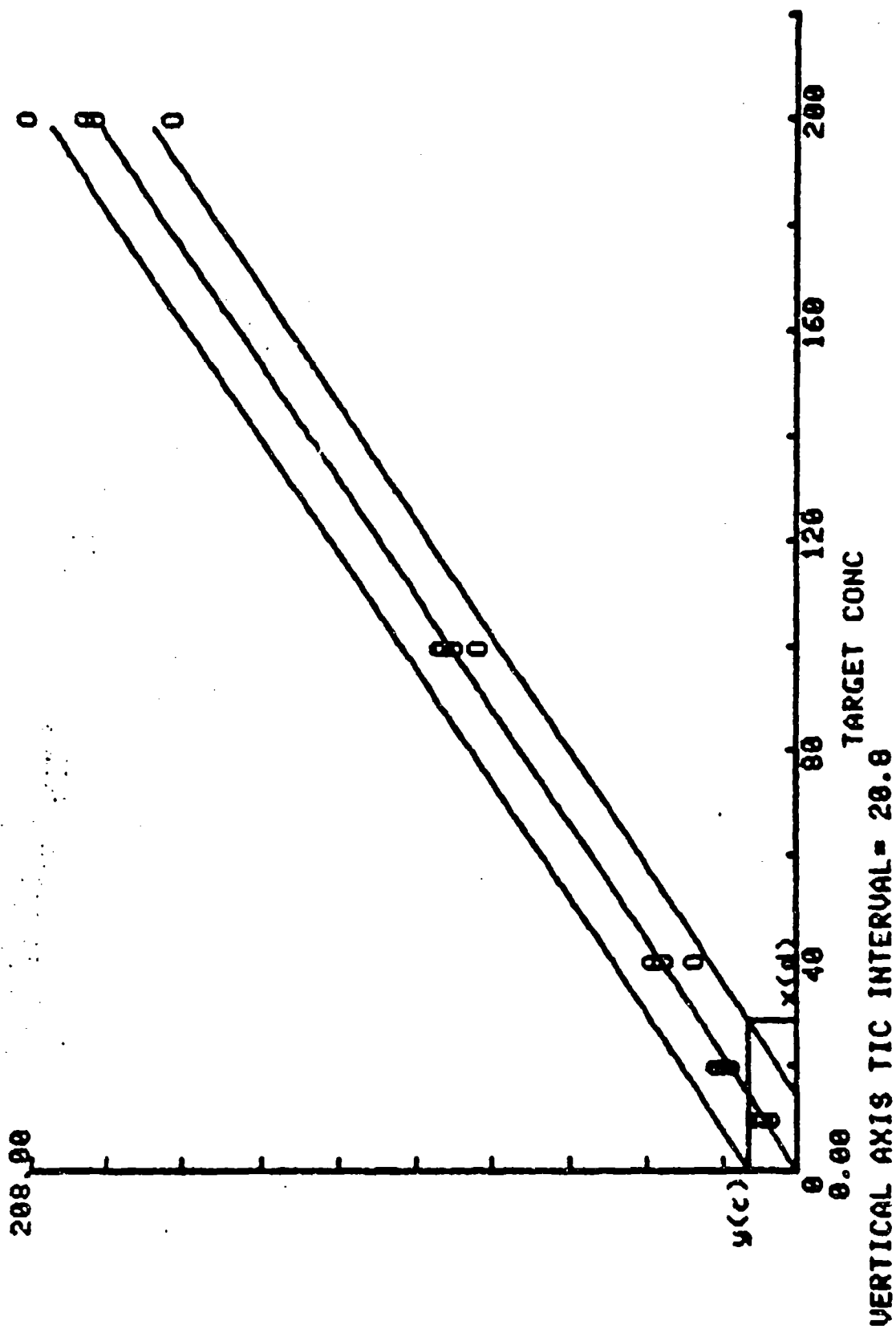
Figure II-109. 2,6-DNT on Metal – Graph of Target-Found Concentration Points

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TABLE II-112.   2,6-DNT on Metal -- Inaccuracy and
Imprecision Data

2,6-DINITROTOLUENE (26DNT)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
10.000	9.725	1.656	-2.750	17.824
20.000	20.450	1.626	2.250	7.950
40.000	36.500	5.178	-8.750	14.185
100.000	93.300	4.622	-6.700	4.954
200.000	189.250	16.439	-5.375	.687
Means		5.904	-4.265	10.560

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2,6-DINITROTOLUENE (26DNT)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.1   TARGET CONC

2.25

-8.75

8   48   88   128   168   288

Figure 15-110. 2,6-DNT on Metal – Graph of Inaccuracy

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2,6-DINITROTOLUENE (26DNT)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.7023611662   TARGET CONC
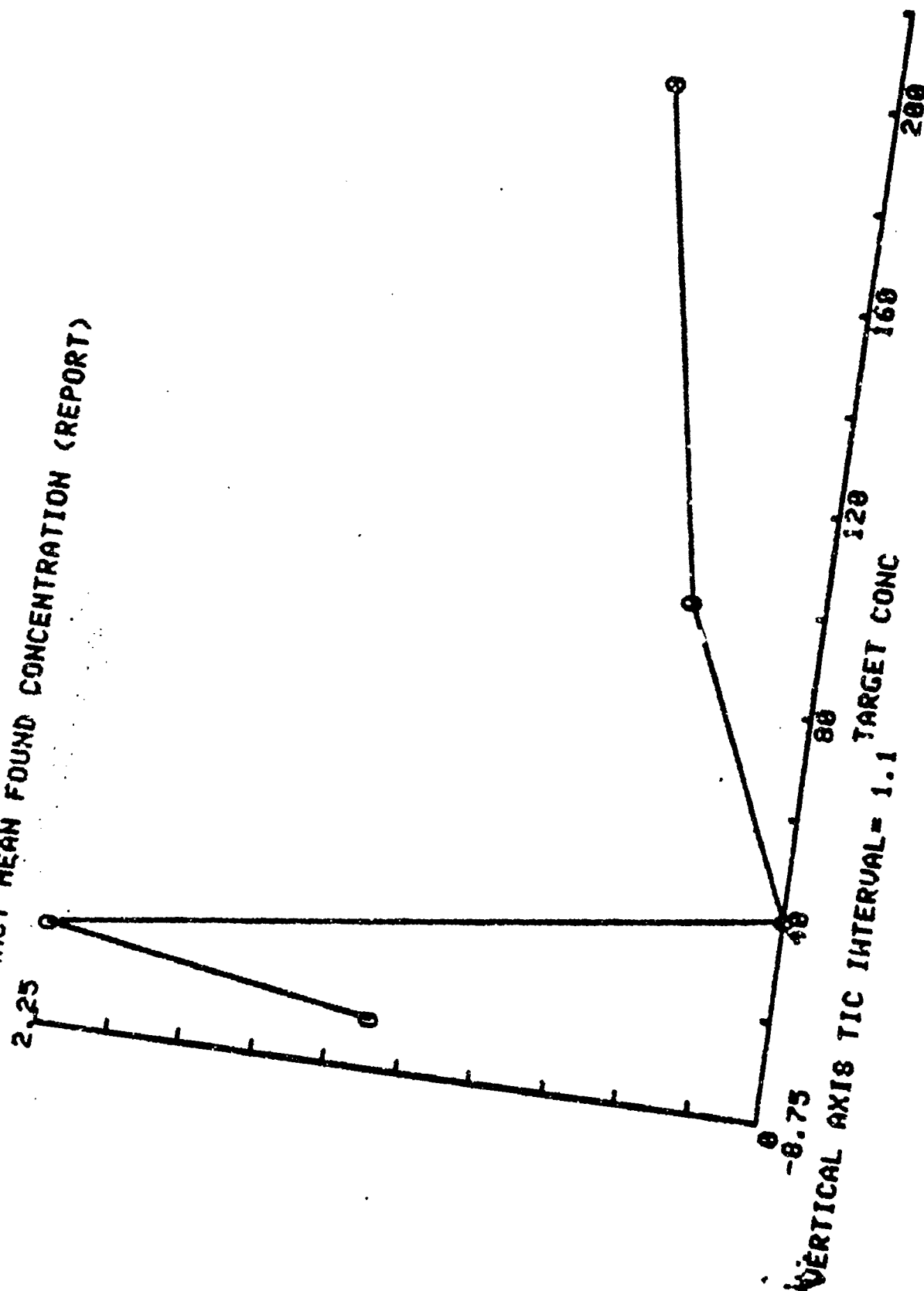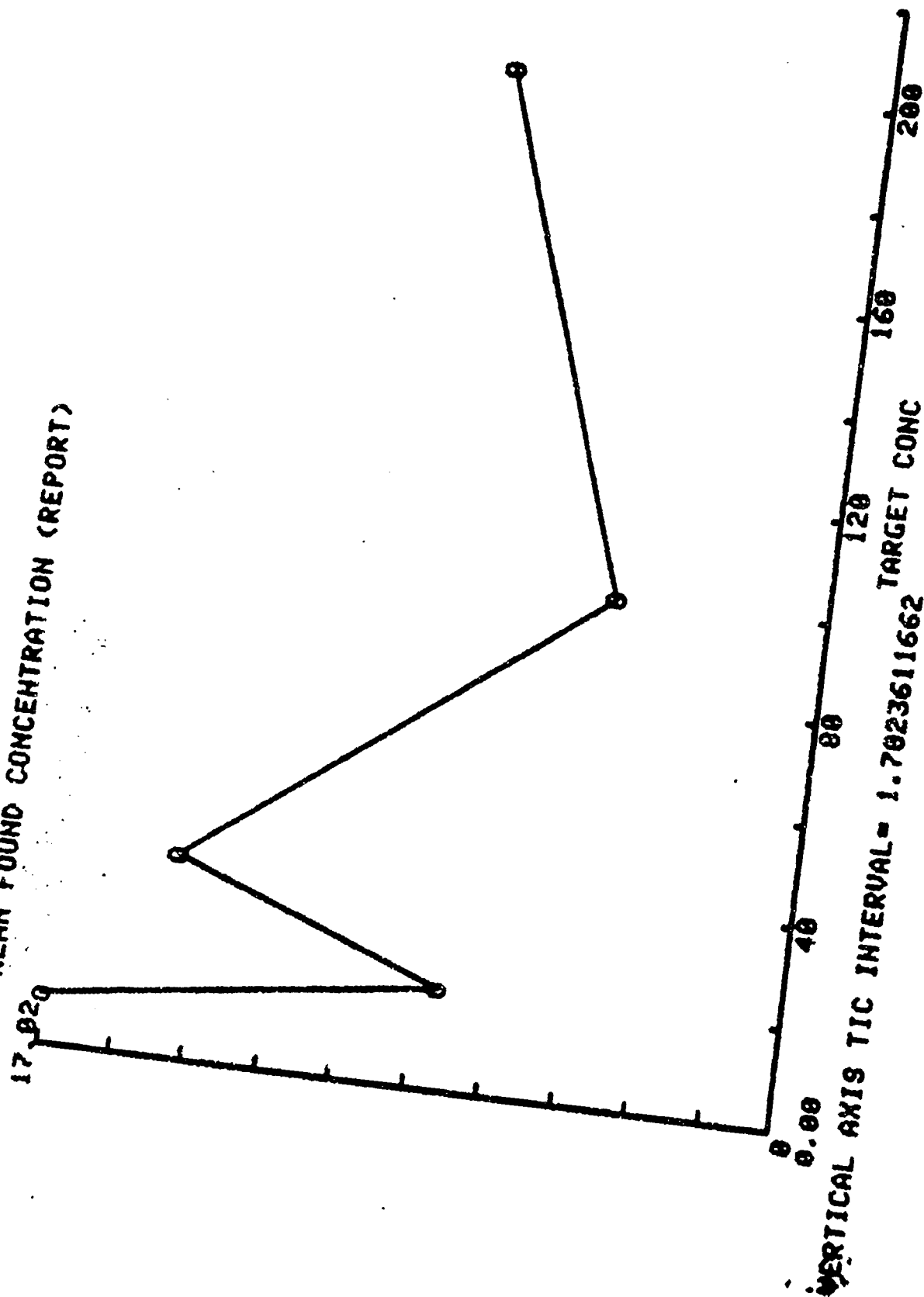
Figure 11-111. 2,6-DNT on Metal — Graph of Imprecision

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Table 11-113. 2,6-DNT on Concrete – Target vs. Found Concentrations

2,6-DINITROTOLUENE (26DNT)
CONCRETE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
10.000	15.000 10.200 9.000 10.200
20.000	10.000 16.600 19.000 20.400
40.000	37.600 35.800 37.400 35.700
100.000	76.900 94.600 97.200 104.000
200.000	120.000 189.000 181.000 196.000

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2,6-DINITROTOLUENE (26DNT)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 74 SD= 72.140214349

FOUND CONC
MEAN= 65.53 SD= 63.846262555

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 1.8729368932
SLOPE= 0.86023058225.4
USF FOR ACCURACY
R= 0.9719973348682
MEAN SQR DEV OF POINTS FROM REGRESSION= 237.809596818
ST ERROR EST= 15.4218763832
USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896488
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 29.9877306664
x(d)= 64.5581819952

Figure II-112. 2,6-DNT on Concrete – Graph of Target–
Found Concentration Points

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Table II-115. 2,6-DNT on Concrete – Inaccuracy and Imprecision Data

2,6-DINITROTOLUENE (26DNT)
CONCRETE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
10.000	9.850	0.574	-1.500	5.832
20.000	16.500	4.689	-17.500	27.931
40.000	36.625	1.014	-8.438	2.770
100.000	93.175	11.551	-6.825	12.397
200.000	171.500	34.876	-14.250	20.336
Means		18.525	-9.702	13.853

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2,6-DINITROTOLUENE (26DNT)
CONCRETE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.6
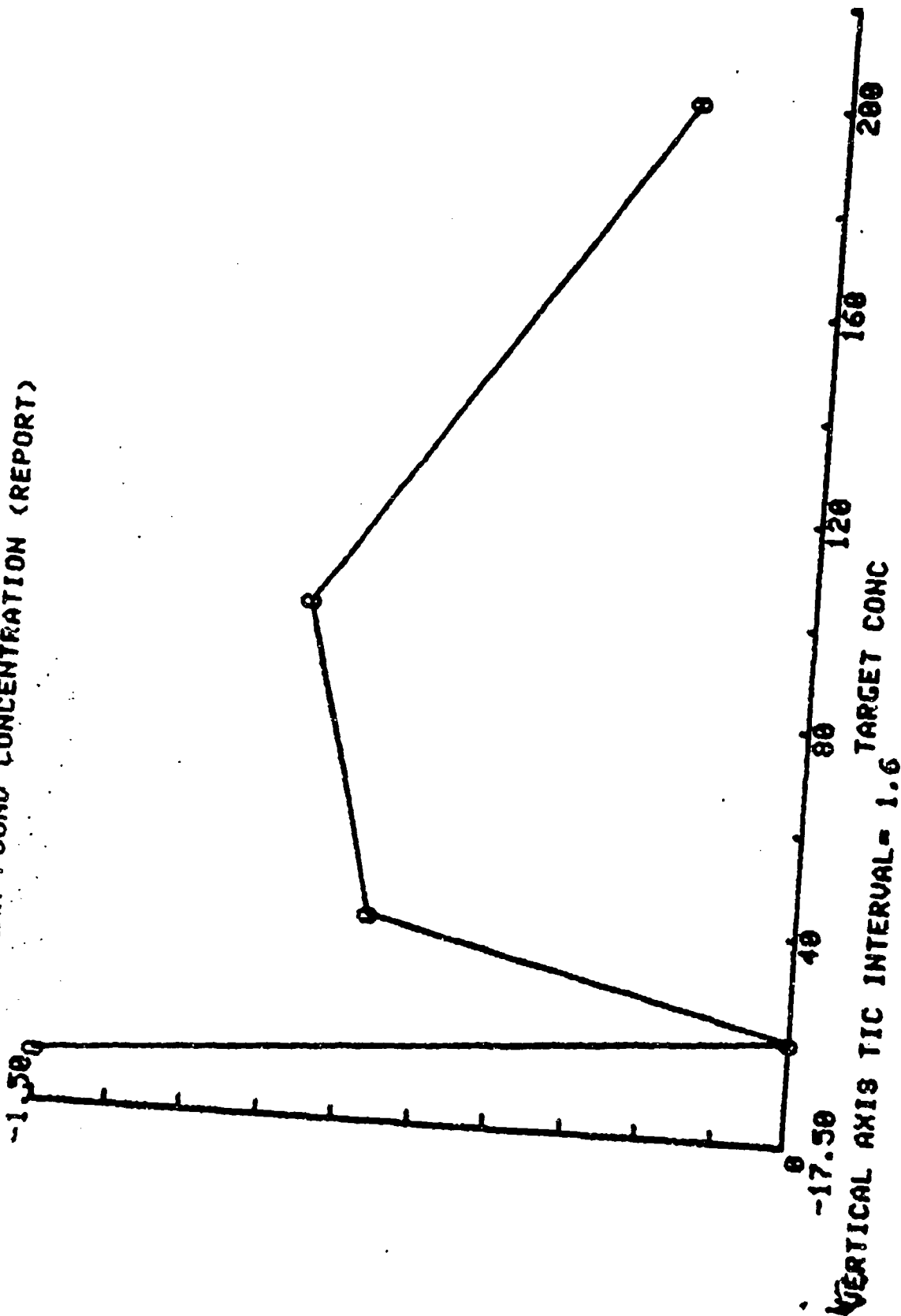
TARGET CONC

Figure II-113. 2,6-DNT on Concrete - Graph of Inaccuracy

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Figure II-114. 2,6-DNT on Concrete — Graph of Imprecision

2,6-DINITROTOLUENE (26DNT)
CONCRETE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 2.79314398832 TARGET CONC

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Table II-116. 2,6-DNT on Brick - Target vs. Found Concentrations

2,6-DINITROTOLUENE (26DNT)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
10.000	4.000
	5.300
	5.600
	4.300
20.000	8.000
	9.100
	8.600
	7.100
40.000	17.300
	24.800
	25.200
	16.700
100.000	46.200
	62.400
	57.400
	45.400
200.000	89.800
	94.300
	123.000
	80.820

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2,6-DINITROTOLUENE (26DNT)
BRICK SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 74 SD= 72.140214349

FOUND CONC
MEAN= 36.77 SD= 36.3865400894

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 0.463001618123
SLOPE= 0.490635113269
  USE FOR ACCURACY
R= 0.972736659578
MEAN SQR DEV OF POINTS FROM REGRESSION= 75.1641619382
ST ERROR EST= 8.66972675107
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406896400
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 16.2691343172
x(d)= 63.6301961361

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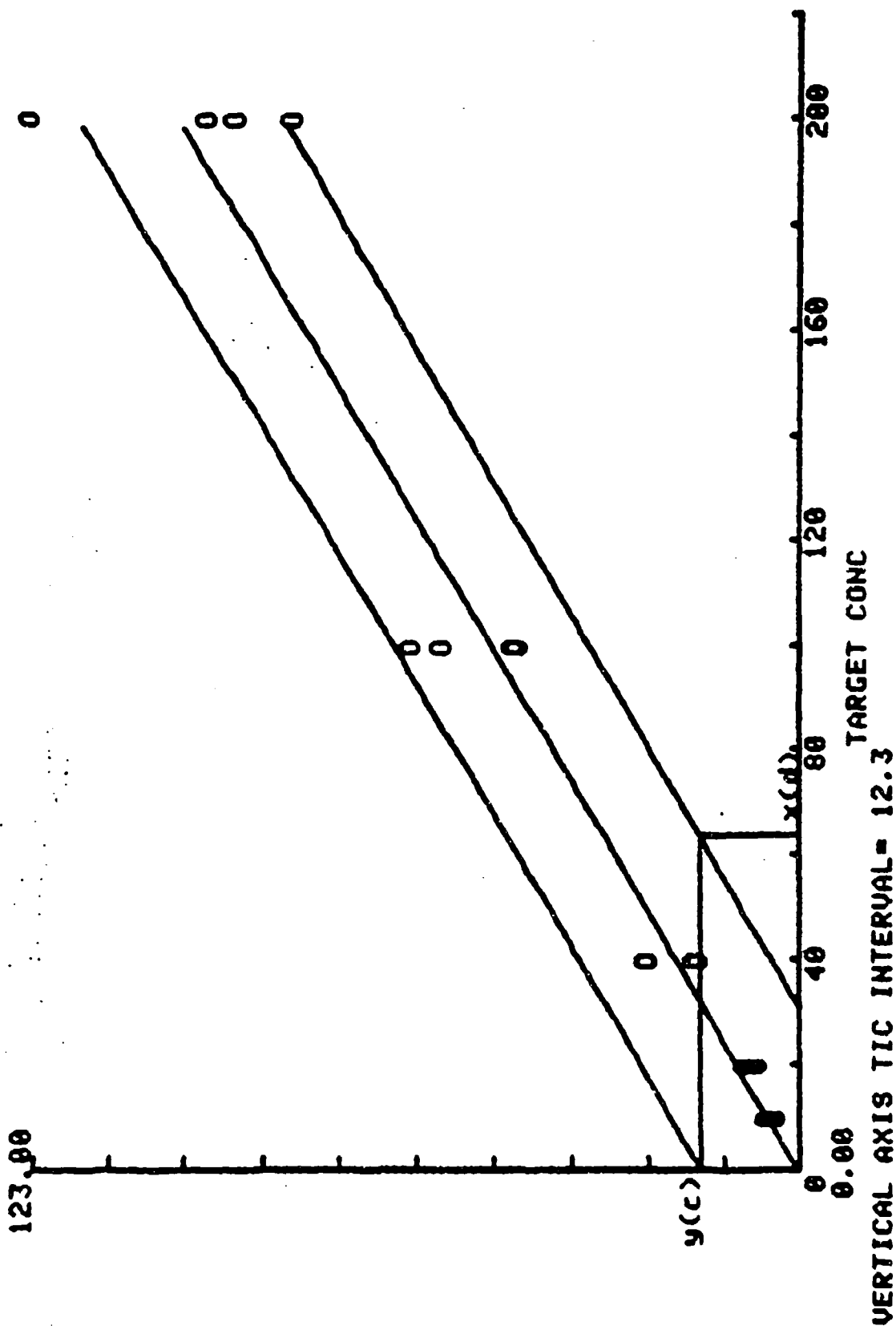
Figure 11-115. 2,6-DNT on Brick — Graph of Target-Found
Concentration Points

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2,6-DINITROTOLUENE (26DNT)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
10.000	4.800	8.770	-52.000	16.848
20.000	8.220	8.873	-58.900	18.626
40.000	21.000	4.628	-47.500	22.039
100.000	52.850	8.399	-47.150	15.892
200.000	96.980	18.229	-51.510	18.797
Means		6.580	-51.412	16.680

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2,6-DINITROTOLUENE (26DNT)
BRICK SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL = 1.175 TARGET CONC

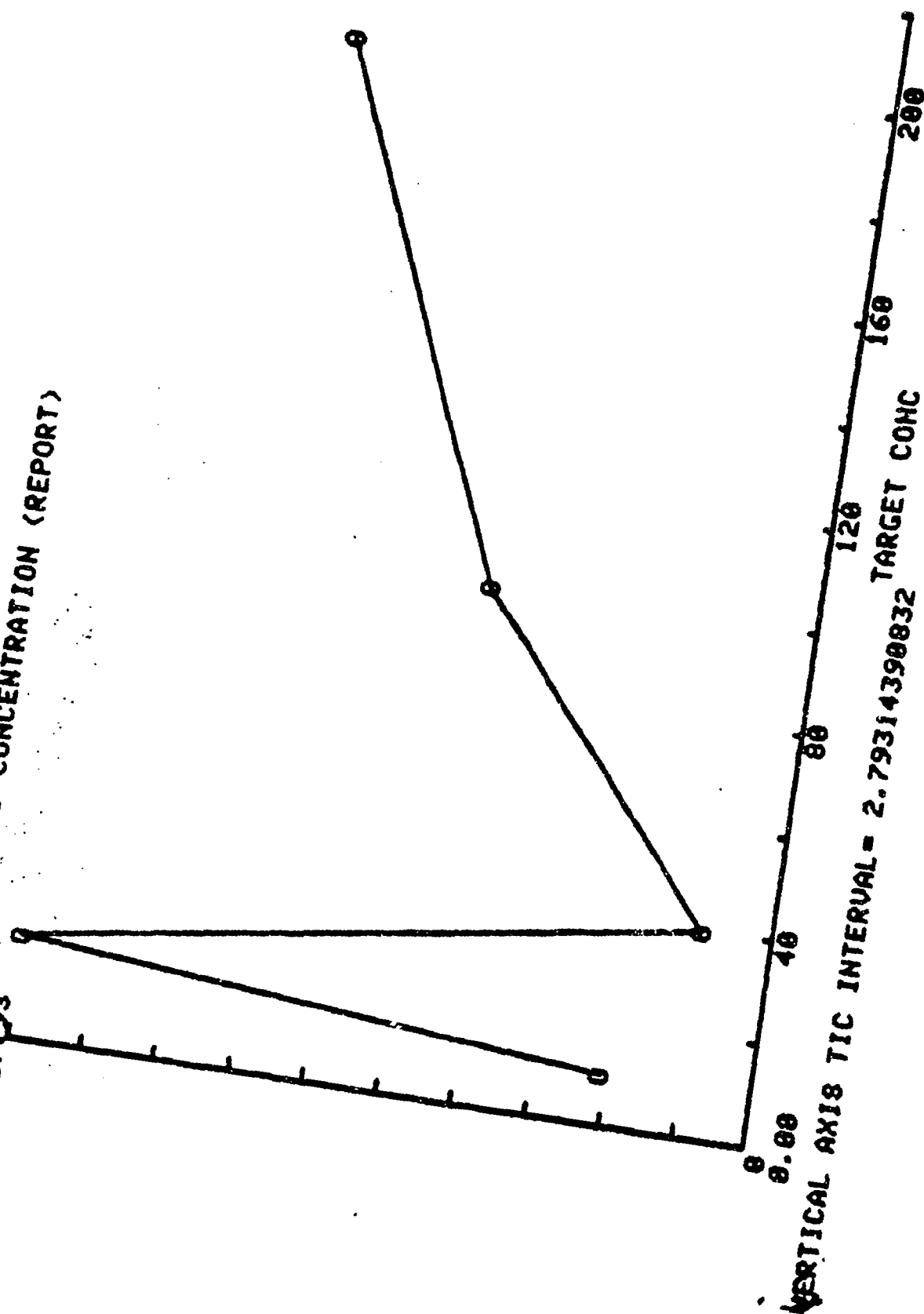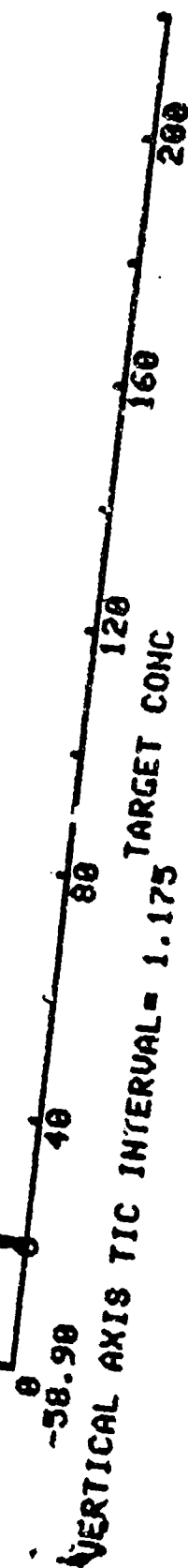Figure 11-116. 2,6-DNT on Brick – Graph of Inaccuracy
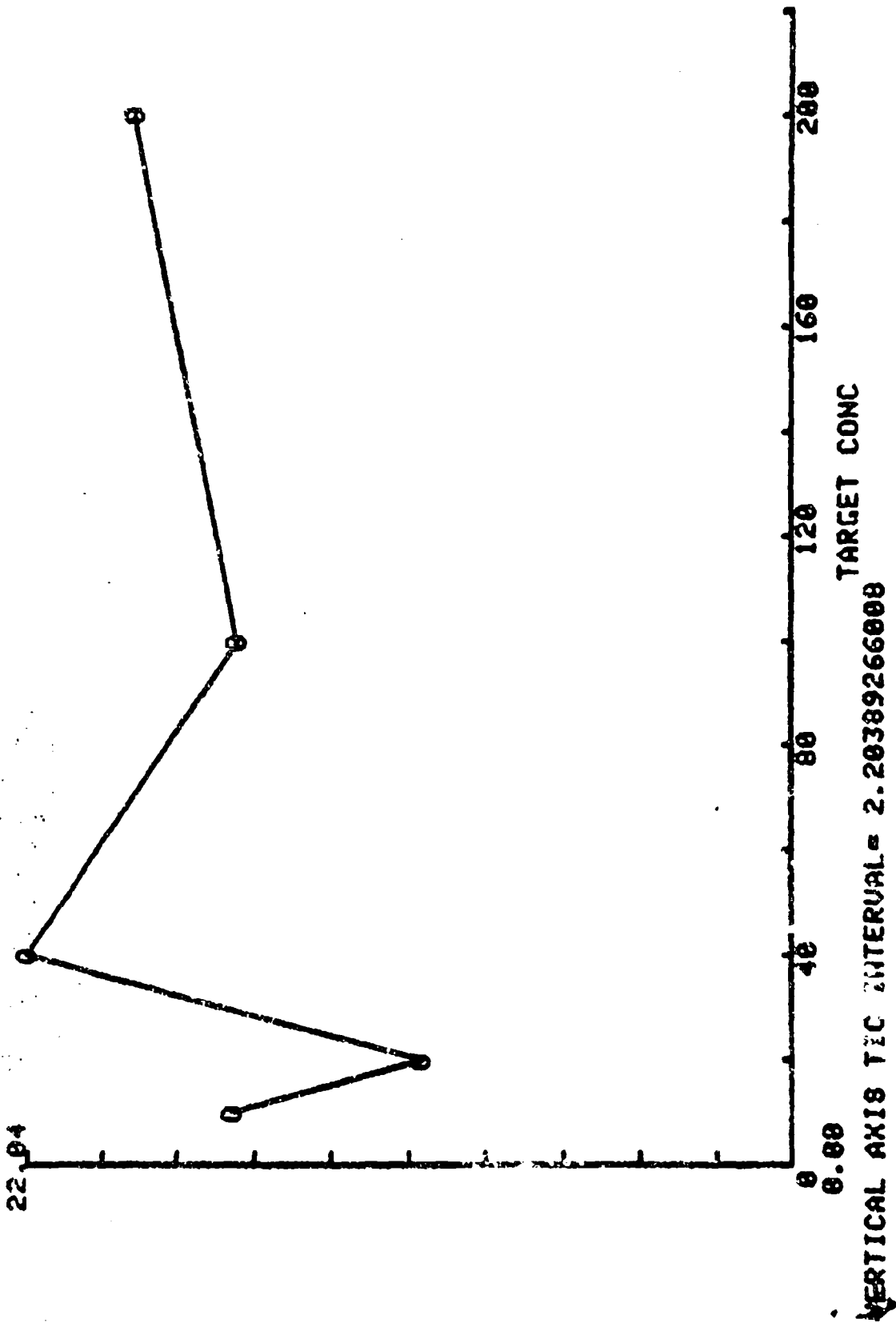
Figure II-117. 2,6-DNT on Brick - Graph of Imprecision

TABLE II-119. 2,6-DNT on Transite – Target vs. Found Concentrations

2,6-DINITROTOLUENE (26DNT)
TRANSITE SURFACE
TARGET CONC. vs FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
10.000	7.500
	8.700
	7.500
	7.800
20.000	14.700
	16.300
	17.800
	19.900
40.000	27.700
	36.000
	36.600
	33.200
100.000	89.000
	87.300
	81.900
	89.700
200.000	152.000
	156.000
	164.000
	168.000

2,6-DINITROTOLUENE (26DNT)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 74   SD= 72.14021434349

FOUND CONC
MEAN= 60.68   SD= 57.37205077785

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 1.9974312297?
SLOPE= 0.79300768684
 USE FOR ACCURACY
R= 0.9971361260l
MEAN SQR DEV OF POINTS FROM REGRESSION= 19.8720841201
ST ERROR EST= 4.45781158418
 USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.7340896408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 10.12464494767
x(d)= 28.37455583959

293
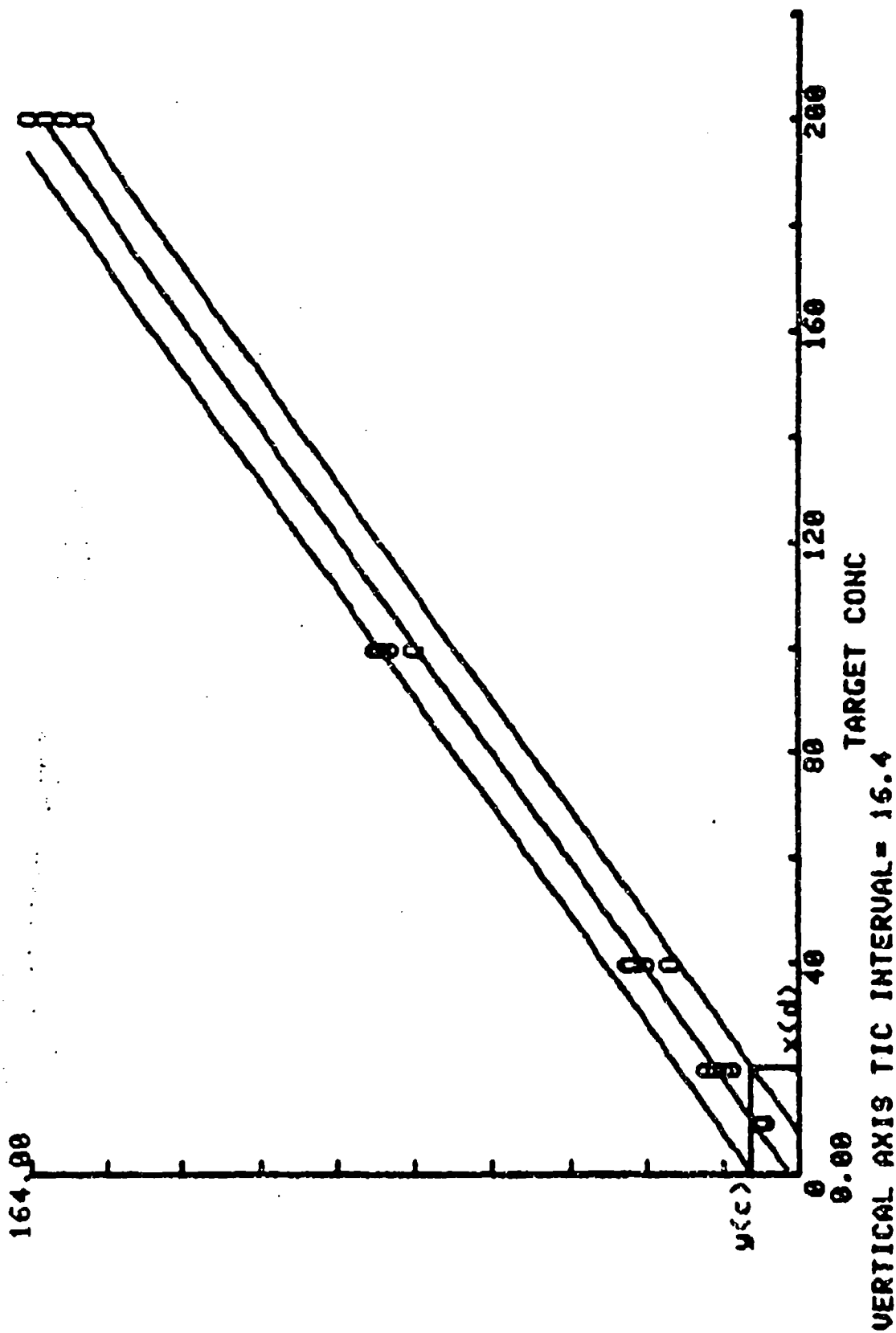
Figure 11-118. 2,6-DNT on Transite – Graph of Target–
Found Concentration Points

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TABLE II-121. 2,6-DNT on Transite – Inaccuracy and Imprecision Data

2,6-DINITROTOLUENE (26DNT)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
10.000	7.875	0.560	-21.250	7.211
20.000	17.175	2.214	-14.125	12.892
40.000	33.375	4.063	-16.563	12.174
100.000	86.975	3.530	-13.025	4.059
200.000	158.000	5.164	-21.000	3.268
Means		3.108	-17.193	7.921

2,6-DINITROTOLUENE (26DNT)
TRANSITE SURFACE MEAN FOUND CONCENTRATION (REPORT)
MEAN INACCURACY

VERTICAL AXIS TIC INTERVAL= 8.8225

TARGET CONC

Figure II-119. 2,6-DNT on Transite – Graph of Inaccuracy

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2,6-DINITROTOLUENE (26DNT)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC
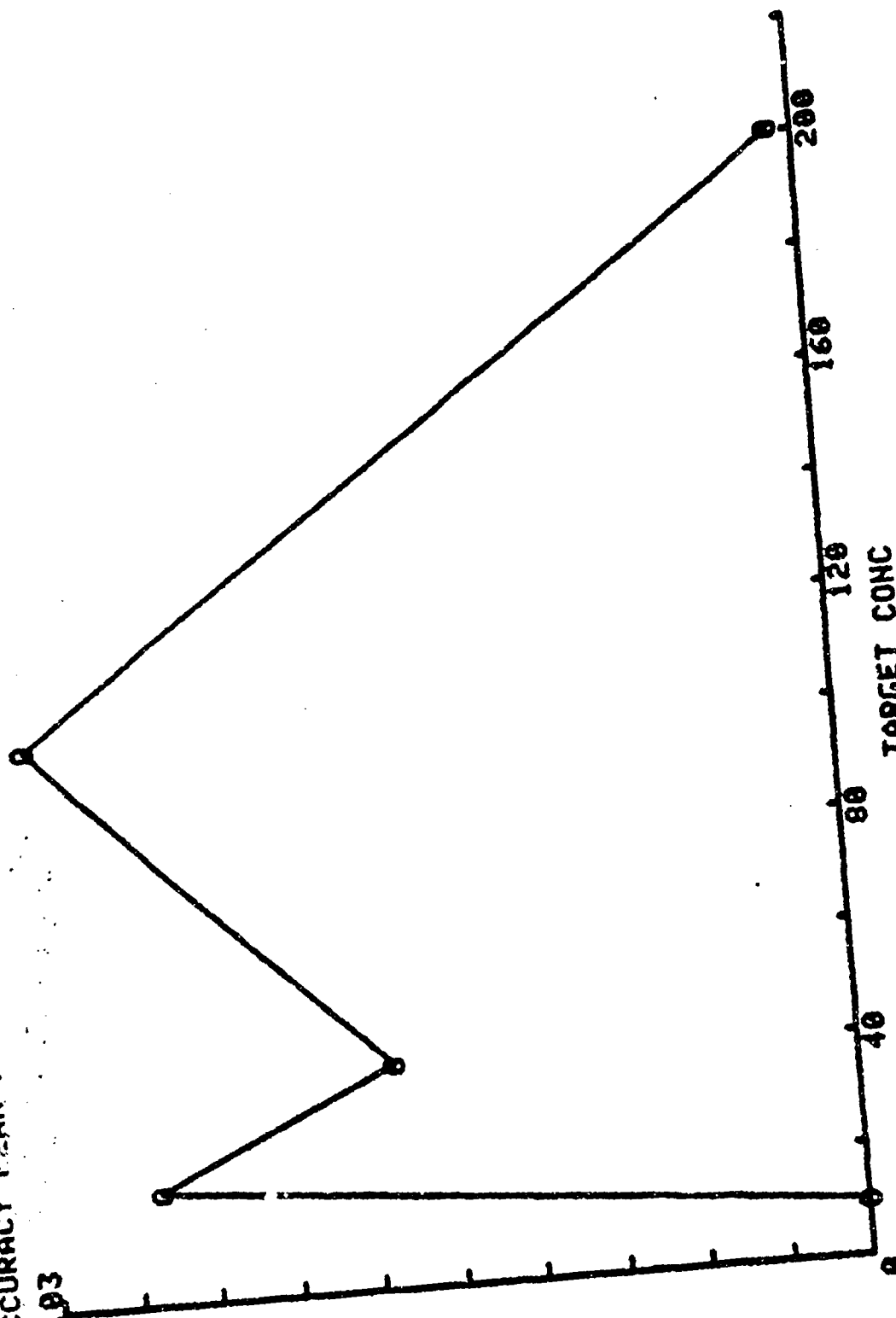
VERTICAL AXIS TIC INTERVAL= 1.28917553569
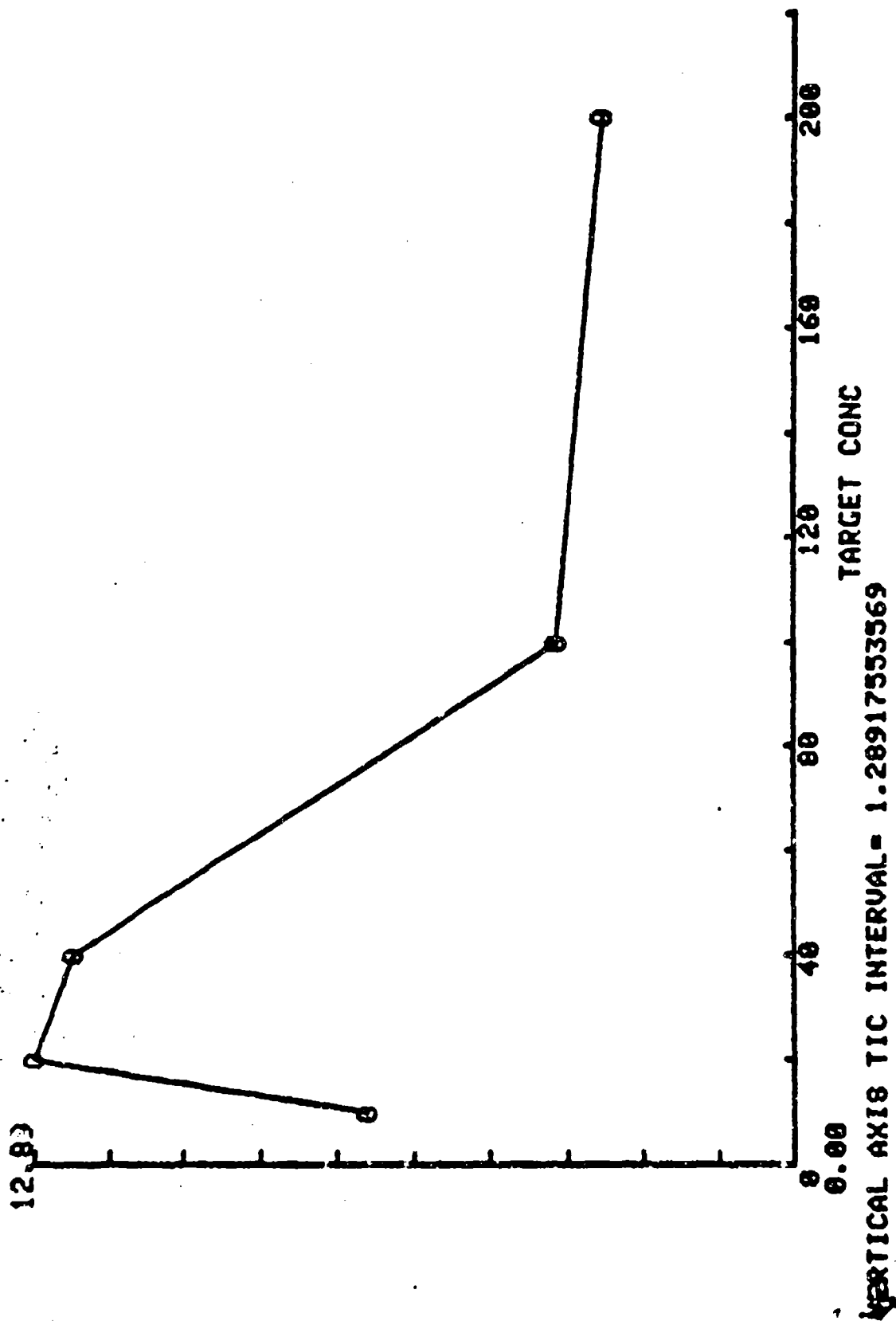
Figure II-120. 2,6-DNT on Transite - Graph of Imprecision

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TABLE II-122. NG on Metal - Target vs. Found
Concentrations

NITROGLYCERIN (NG)
METAL SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
125.000	122.000
	99.500
	102.000
	119.000
250.000	205.000
	210.000
	206.000
	220.000
500.000	415.000
	423.000
	402.000
	443.000
1250.000	1150.000
	1200.000
	1150.000
	1140.000

NITROGLYCERINE (NG)
METAL SURFACE
ANALYSIS OF 16 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 531.25 SD= 450.693909433

FOUND CONC
MEAN= 475.40625 SD= 424.557778588

NO. RUNS 1 TOTAL X-Y ALL RUNS 16 NO. CONCENTR 16
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -24.3256419256
SLOPE= 0.940671794872
  USE FOR ACCURACY
R= 0.998580035082
MEAN SQR DEV OF POINTS FROM REGRESSION= 547.954235351
ST ERROR EST= 23.4084223166
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 14
TWO TAIL P LEVEL IS .1
t= 1.761318165
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 19.9865337733
x(d)= 93.6030226134
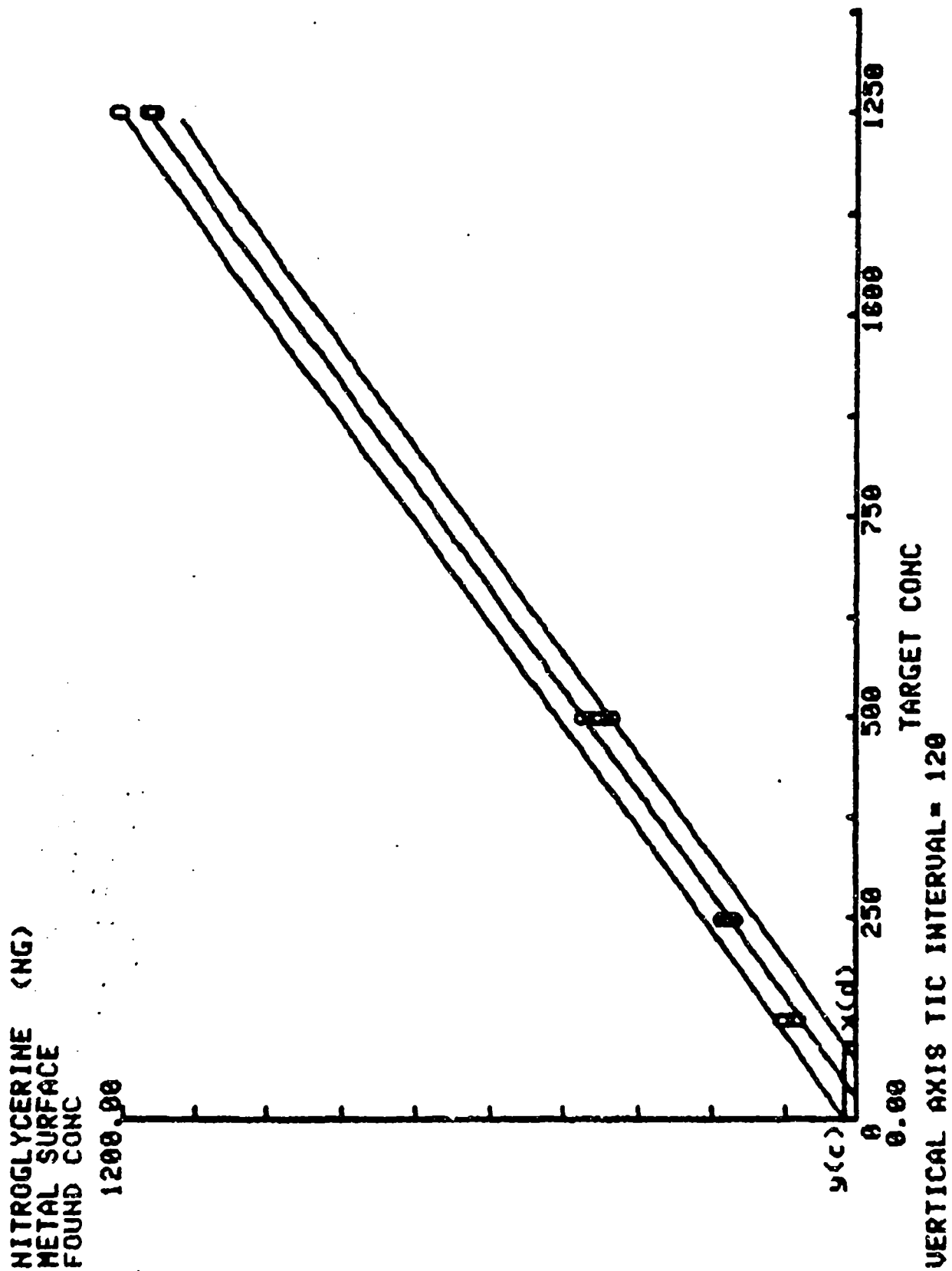
Figure 11-121. NG on Metal - Graph of Target-Found
Concentration Points

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TABLE II-124. NG on Metal – Inaccuracy and
Imprecision Data

NITROGLYCERIN (NG)
METAL SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Conc ug/10 sq CM	Mn Found Conc ug/10 sq CM	Standard Deviation	Mean Pct Inaccuracy	Imprecision
125.000	110.625	11.514	-11.500	10.400
250.000	210.250	6.850	-15.900	3.258
500.000	420.750	17.173	-15.850	4.082
1250.000	1160.000	27.000	-7.200	2.334
Means		15.654	-12.613	5.020

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NITROGLYCERIN (NG)
METAL SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)
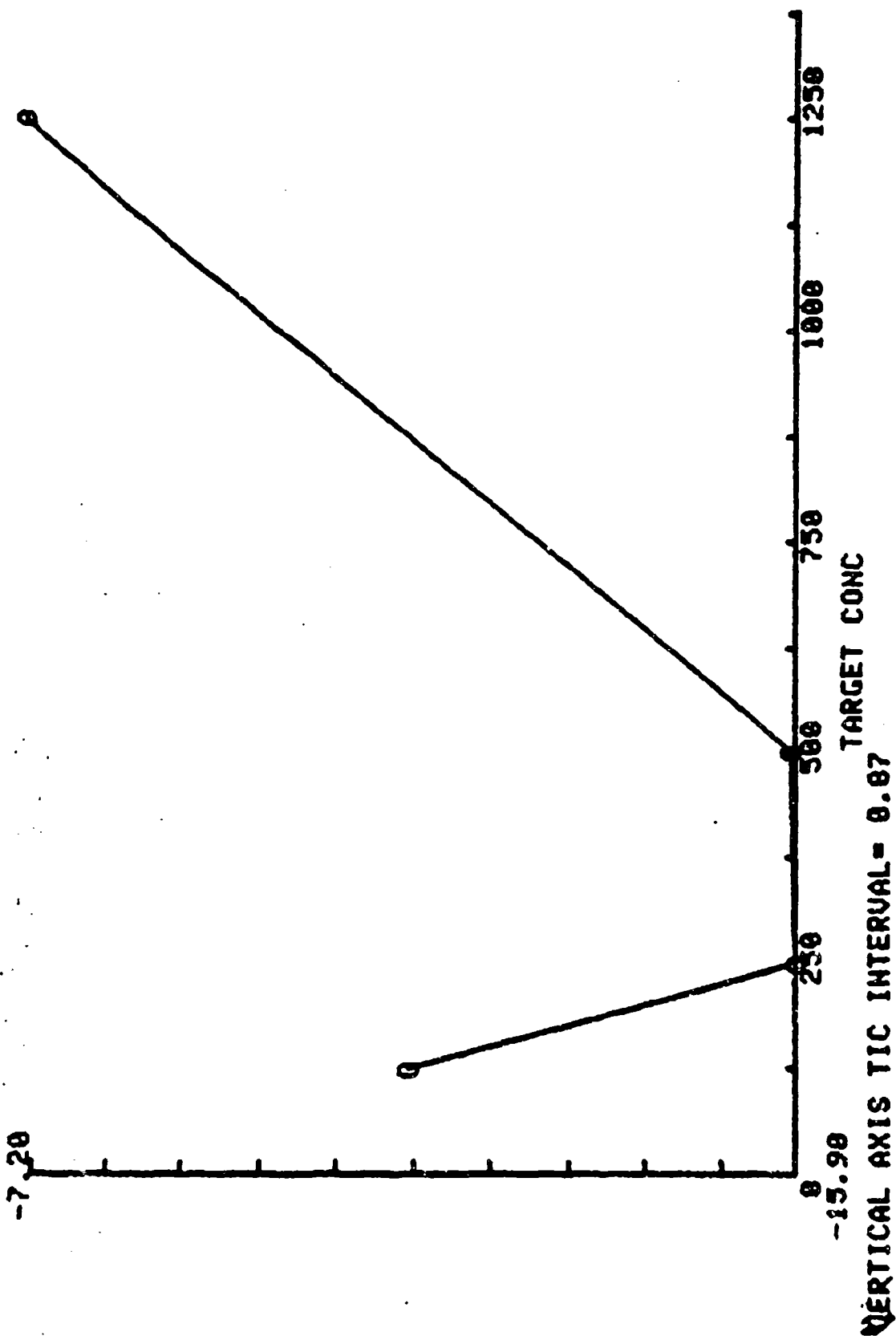
TARGET CONC

VERTICAL AXIS TIC INTERVAL= 8.87

Figure II-122. NG on Metal — Graph of Inaccuracy

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Figure 11-123. NG on Metal — Graph of Imprecision

NITROGLYCERIN (NG)
METAL SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.84877549737

TARGET CONC

303

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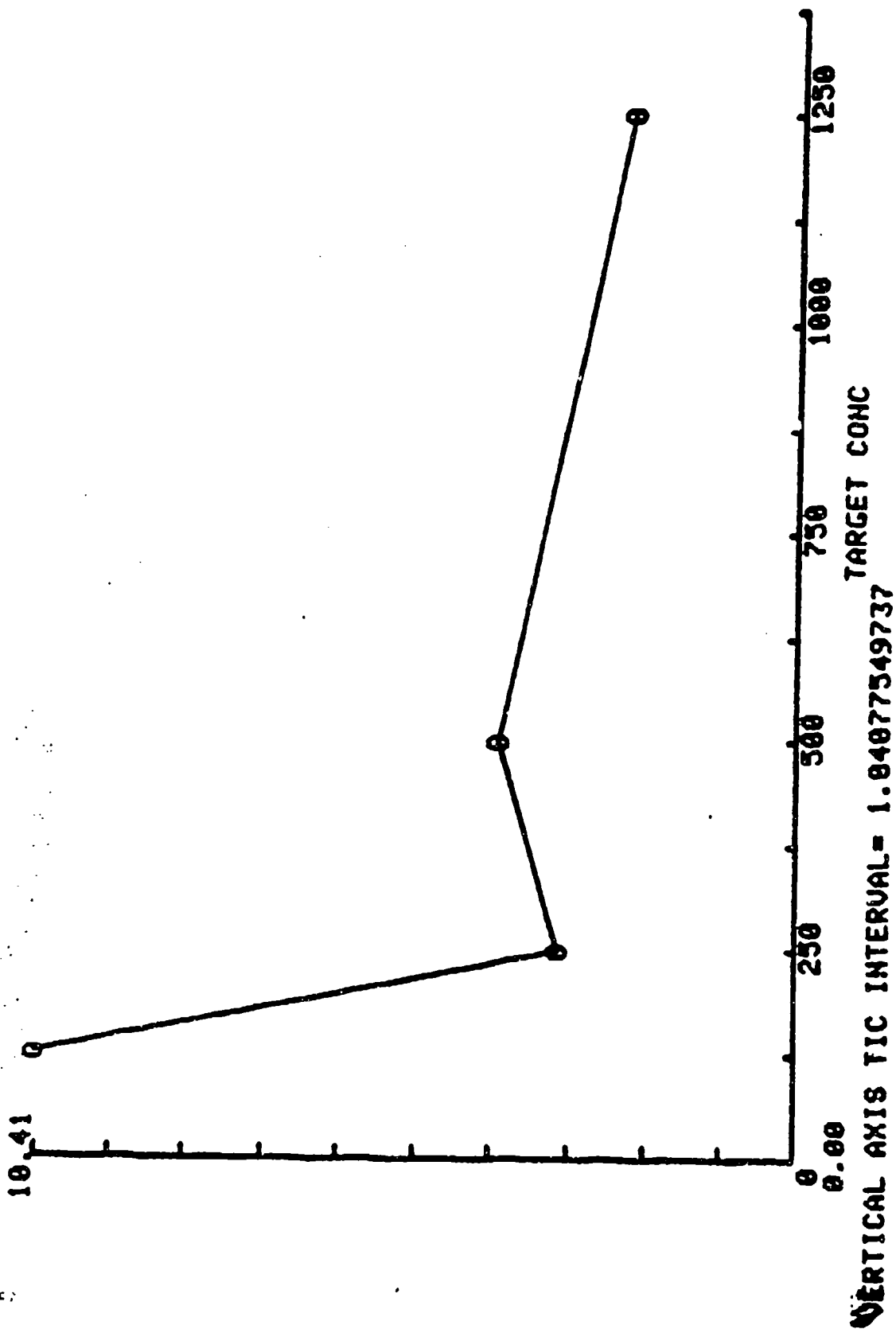
TABLE II-125. NG on Concrete Target vs. Found
Concentrations

NITROGLYCERIN (NG)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
125.000	93.300
	86.600
	95.900
	99.500
250.000	181.000
	142.000
	193.000
	196.000
500.000	396.000
	392.000
	436.000
	429.000
1250.000	866.000
	883.000
	1007.000
	1014.000

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NITROGLYCERINE (NG)
CONCRETE SURFACE
ANALYSIS OF 16 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 531.25 SD= 450.69399433

FOUND CONC
MEAN= 466.89375 SD= 343.646924364

NO. RUNS 1 TOTAL X-Y ALL RUNS 16 NO. CONCENTR 16
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 4.94128285129
SLOPE= 0.756616410256
  USE FOR ACCURACY
R= 0.992304553687
MEAN SQR DEV OF POINTS FROM REGRESSION= 1939.89261997
ST ERROR EST= 44.0442121852
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 14
TWO TAIL P LEVEL IS .1
t= 1.7613101065
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 88.317034391
x(u)= 217.475873209

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Figure II-124.   NG on Concrete — Graph of Target-Found
Concentration Points

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TABLE II-127. NG on Concrete – Inaccuracy and Imprecision Data

NG
NITROGLYCERIN (NG)
CONCRETE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
125.000	93.825	5.446	-24.940	5.805
250.000	178.000	24.860	-28.800	13.966
500.000	413.250	22.470	-17.350	5.437
1250.000	942.500	78.878	-24.600	8.369
Means		32.913	-23.923	8.394

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NITROGLYCERIN (NG)
CONCRETE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.145

TARGET CONC
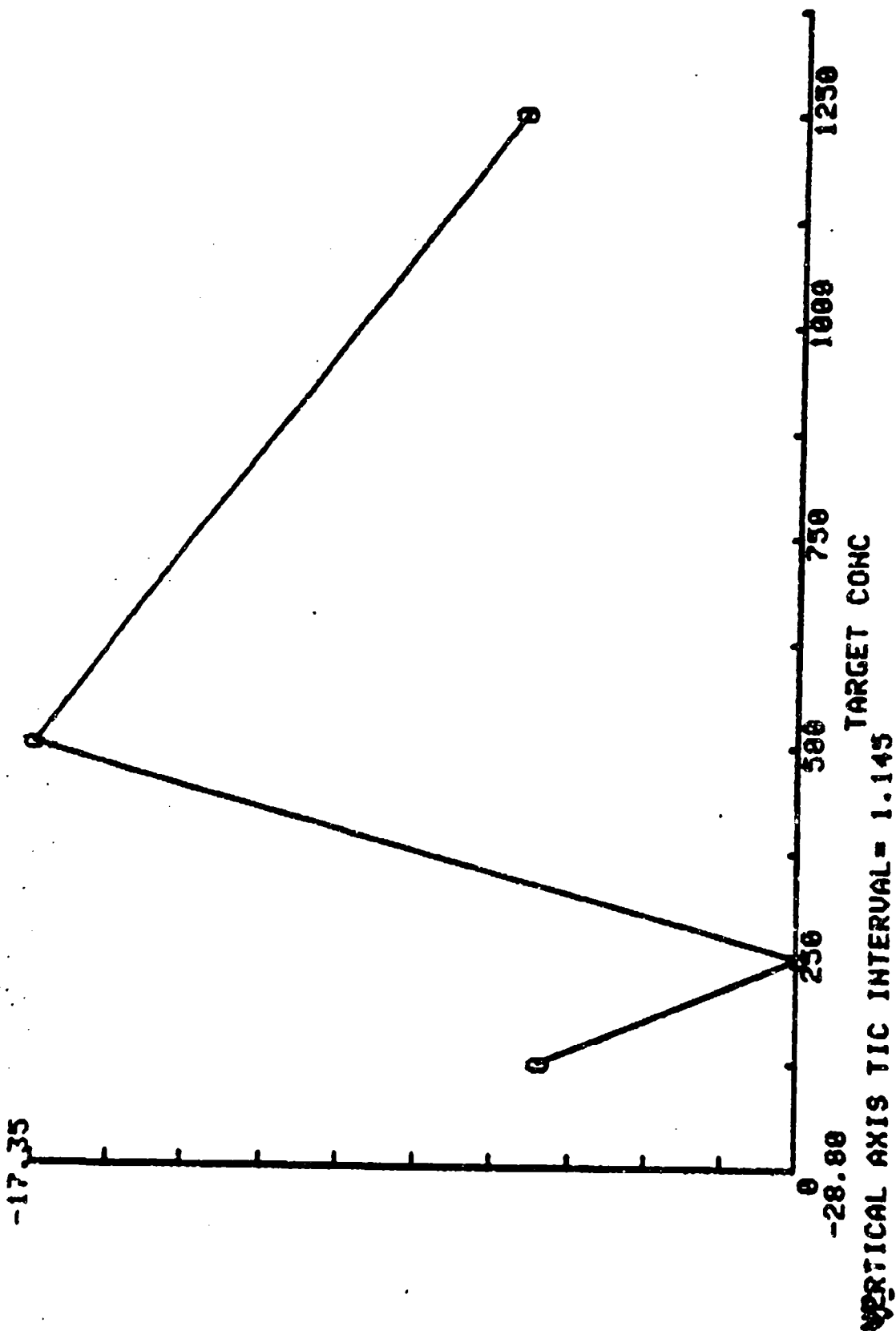
Figure II-125. NG on Concrete - Graph of Inaccuracy

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NITROGLYCERIN (NG)
CONCRETE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.3966786682
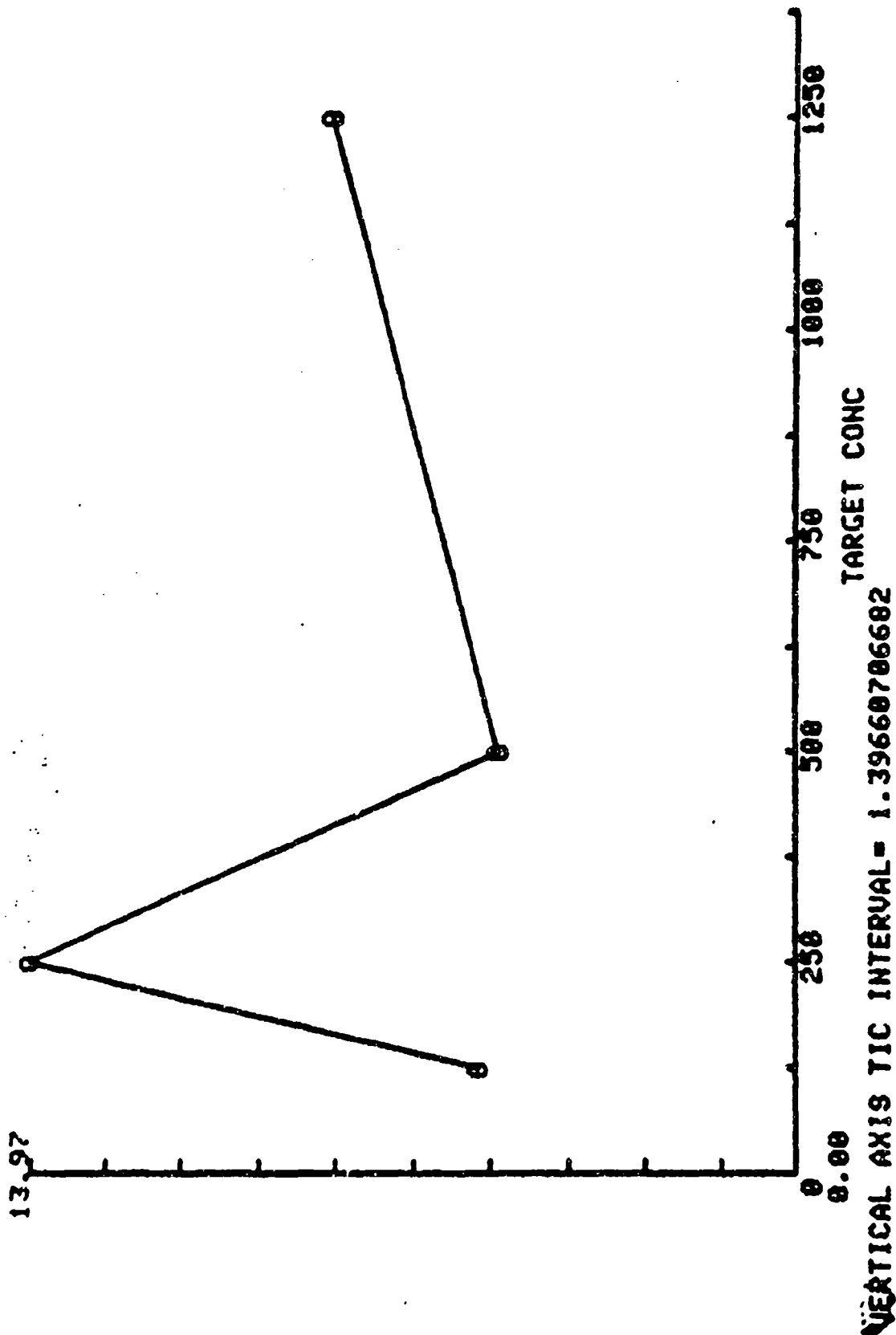
TARGET CONC

Figure II-126. NG on Concrete — Graph of Imprecision

309

TABLE II-128. NG on Brick – Target vs. Found
Concentrations

NITROGLYCERIN (NG)
BRICK SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
125.000	33.800 56.600 58.800 42.800
250.000	85.900 87.500 88.800 77.400
500.000	222.000 282.000 242.000 262.000
1250.000	537.000 614.000 560.000 453.000

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NITROGLYCERINE (NG)
BRICK SURFACE
ANALYSIS OF 16 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 531.25   SD= 458.693989433

FOUND CONC
MEAN= 227.725   SD= 203.495737875

NO. RUNS 1 TOTAL X-Y ALL RUNS 16 NO. CONCENTR 16
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -8.04974358974
SLOPE= 0.443811282051
  USE FOR ACCURACY
R= 0.982934796801
MEAN SQR DEV OF POINTS FROM REGRESSION= 1501.39082051
ST ERROR EST= 38.7477847175
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 14
TWO TAIL P LEVEL IS .1
t= 1.7613101065
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 65.29986478
x(d)= 324.819610735

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Figure II-127. NG on Brick — Graph of Target-Found
Concentration Points

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TABLE II-130. NG on Brick - Inaccuracy and Imprecision Data

NITROGLYCERIN (NG)
BRICK SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq CM	Mn Found Conc ug/10 sq CM	Standard Deviation	Mean Pct Inaccuracy	Imprecision
125.000	48.000	11.822	-61.600	24.629
250.000	84.900	5.139	-66.040	6.053
500.000	237.000	34.157	-52.600	14.412
1250.000	541.000	66.958	-56.720	12.377
Means		29.519	-59.240	14.368

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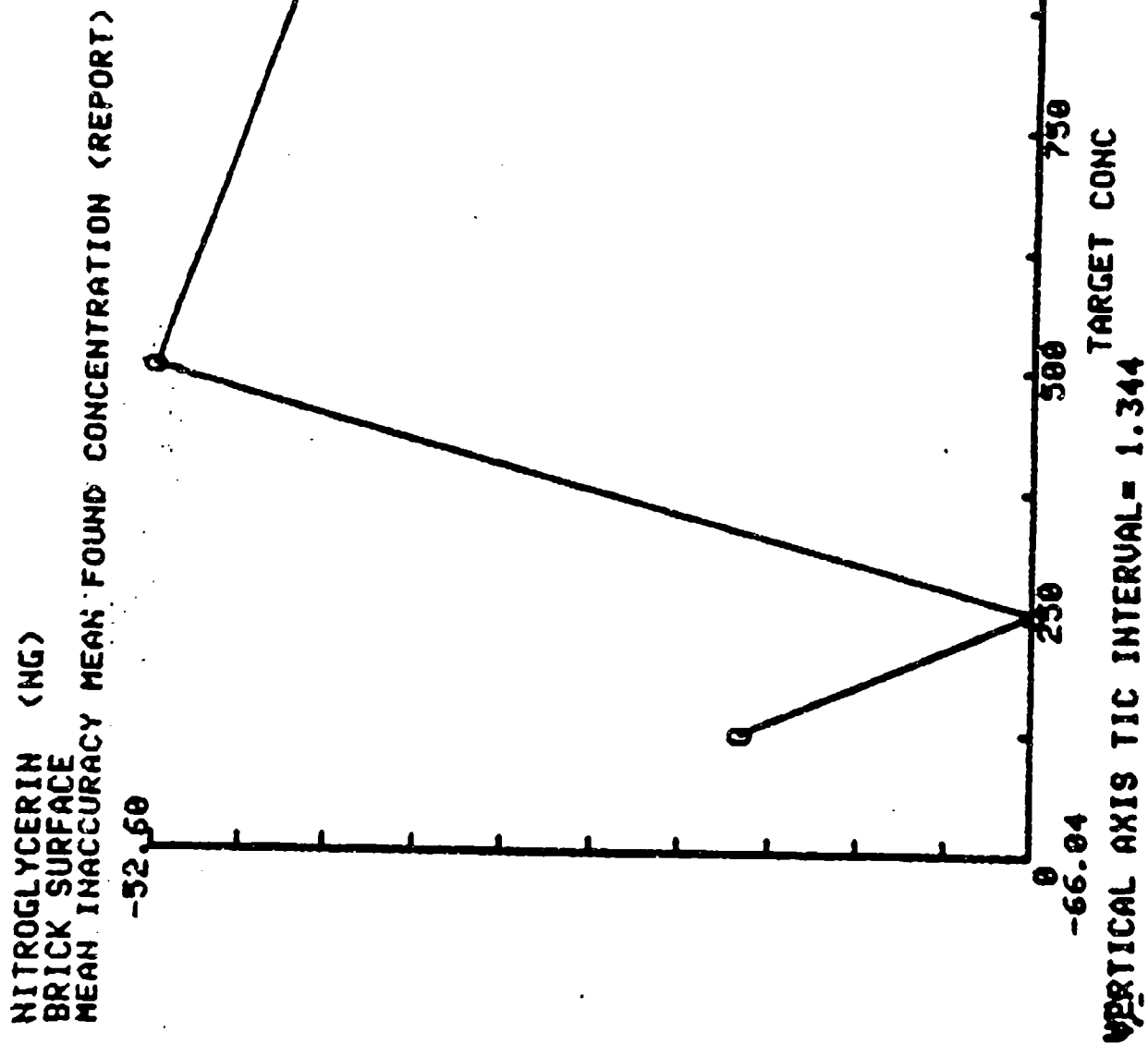
Figure 11-128. NG on Brick – Graph of Inaccuracy
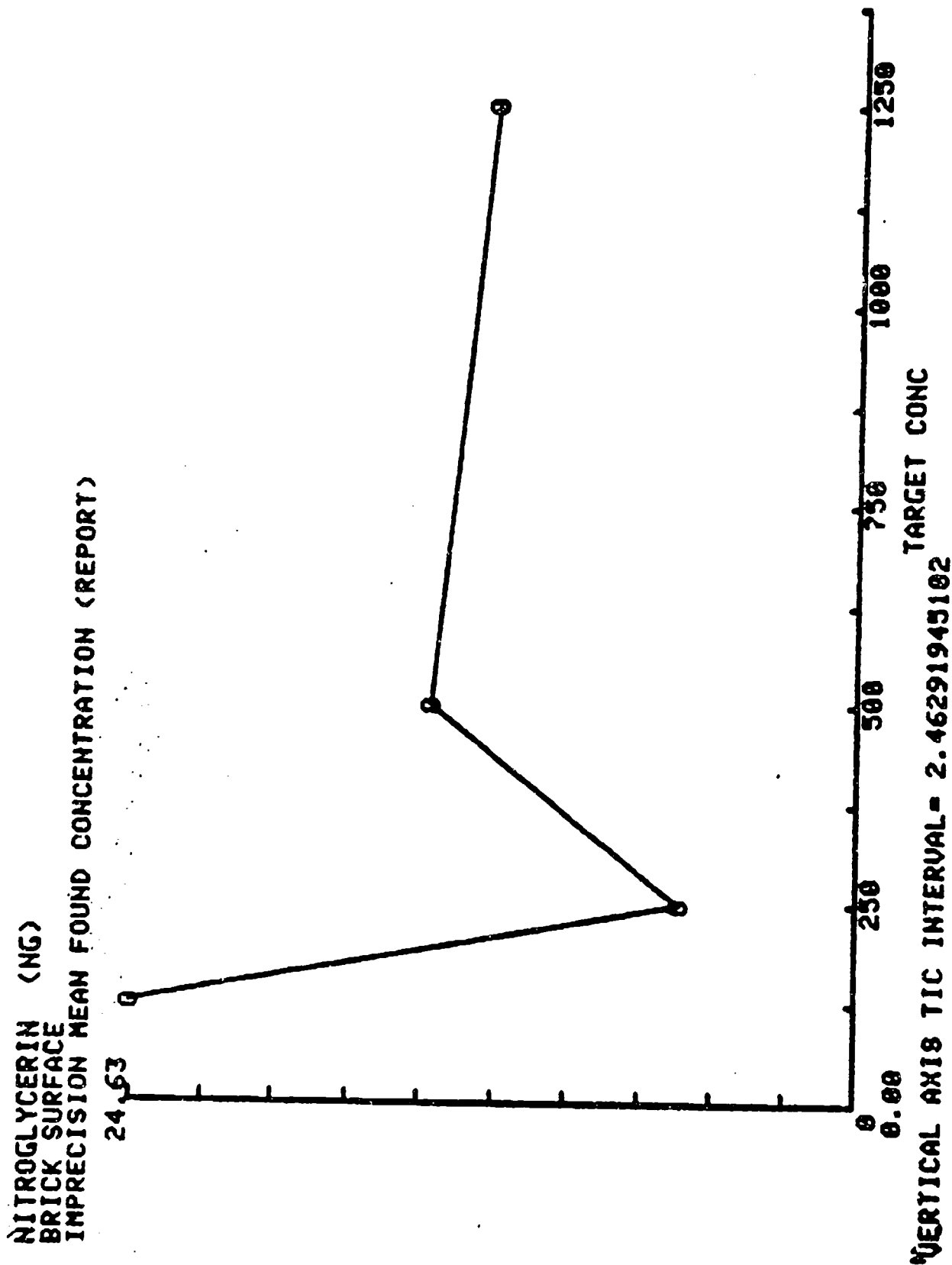
314

NITROGLYCERIN (NG)
BRICK SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

24.63

0.00

VERTICAL AXIS TIC INTERVAL= 2.4629194518²

TARGET CONC

0   250   500   750   1000   1250

Figure II-129.   NG on Brick – Graph of Imprecision

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TABLE II-131. NG on Transite – Target vs. Found Concentrations

NITROGLYCERIN (NG)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc ug/10 sq cm	Found Conc ug/10 sq cm
125.000	83.600
	76.000
	91.650
	85.500
250.000	164.000
	138.000
	174.000
	138.000
500.000	325.000
	442.000
	396.000
	369.000
1250.000	938.000
	952.000
	764.000
	902.000

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TABLE II-132. NG on Transite – Analysis of Target-
Found Concentration Points

NITROGLYCERINE (NG)
TRANSITE SURFACE
ANALYSIS OF 16 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 531.25   SD= 450.6939089433

FOUND CONC
MEAN= 377.421875   SD= 328.83558048

NO. RUNS 1 TOTAL X-Y ALL RUNS 16 NO. CONCENTR 16
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -5.90769230769
SLOPE= 0.7215615538462
  USE FOR ACCURACY
R= 0.98895438927б
MEAN SQR DEV OF POINTS FROM REGRESSION= 2545.27895262
ST ERROR EST= 50.4587577011
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 14
TWO TAIL P LEVEL IS .1
t= 1.7613101065
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 89.5965595952
x(d)= 268.722616729

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Figure II-130. NG on Transite – Graph of Target–Found
Concentration Points

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TABLE II-133. NG on Transite - Inaccuracy and
Imprecision Data

NITROGLYCERIN (NG)
TRANSITE SURFACE
STATISTICAL DATA USED TO DETERMINE PERCENT
INACCURACY AND IMPRECISION

Mn Targt Con ug/10 sq cm	Mn Found Conc ug/10 sq cm	Standard Deviation	Mean Pct Inaccuracy	Imprecision
125.000	84.188	6.450	-32.650	7.661
250.000	153.500	18.358	-38.600	11.959
500.000	383.000	49.024	-23.400	12.800
1250.000	889.000	85.953	-28.800	9.669
Means		39.946	-30.883	10.522

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NITROGLYCERIN (NG)
TRANSITE SURFACE
MEAN INACCURACY MEAN FOUND CONCENTRATION (REPORT)

TARGET CONC

VERTICAL AXIS TIC INTERVAL= 1.52
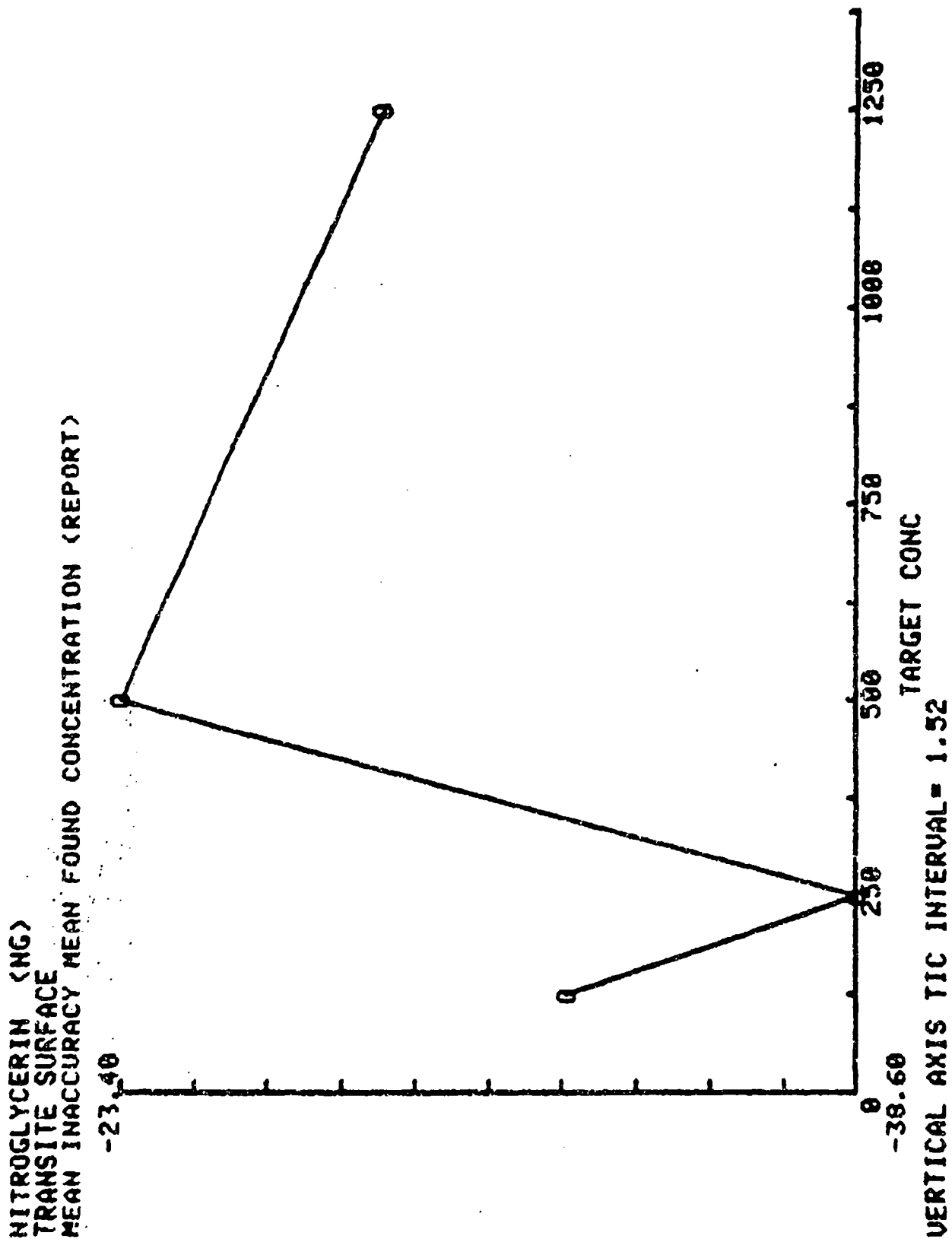
Figure II-131.   NG on Transite   Graph of Inaccuracy

320

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NITROGLYCERIN (NG)
TRANSITE SURFACE
IMPRECISION MEAN FOUND CONCENTRATION (REPORT)

VERTICAL AXIS TIC INTERVAL= 1.27999487577
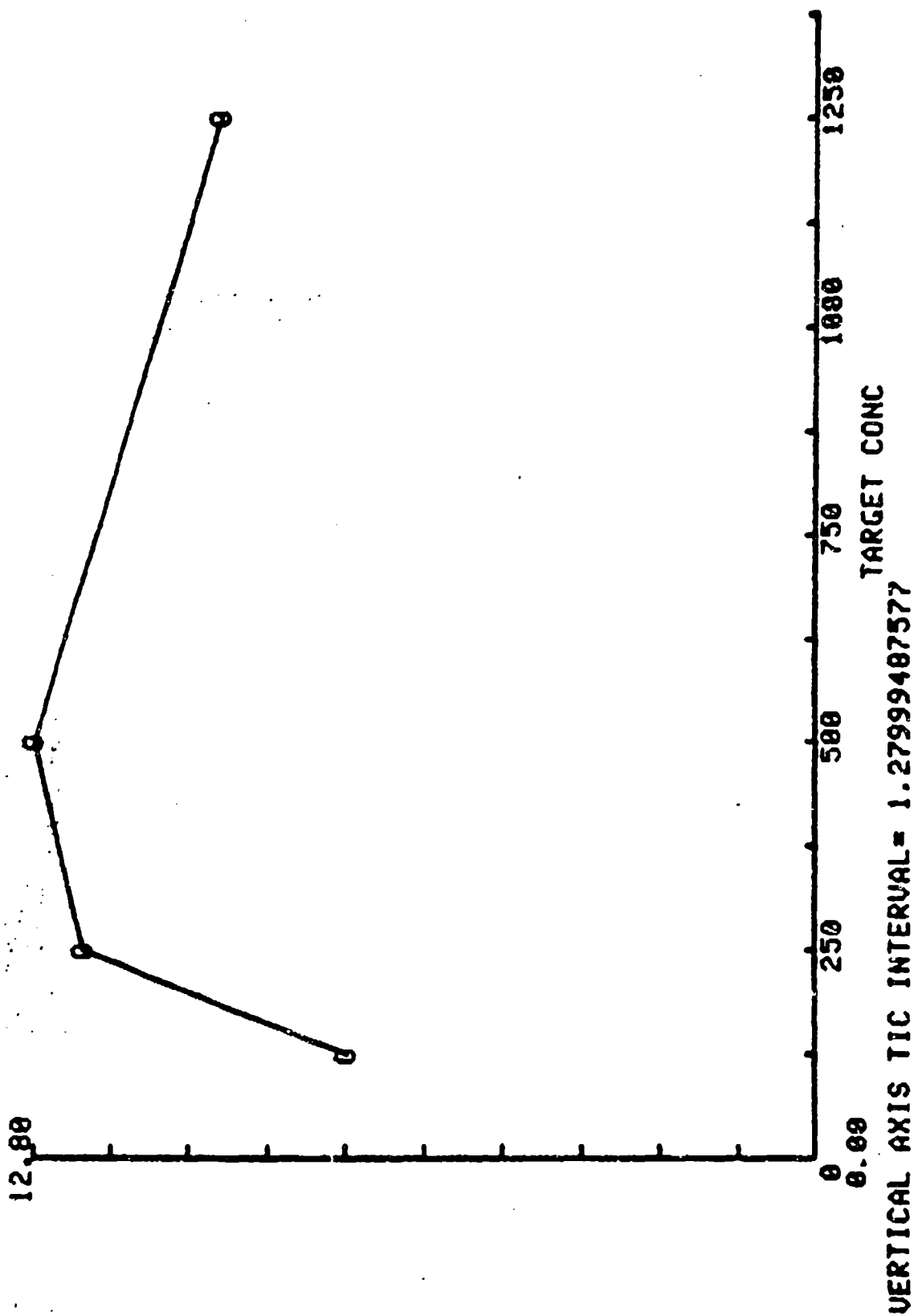
TARGET CONC

Figure 11-132. NG on Transite – Graph of Imprecision

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TABLE II-134. PETN on Metal - Target vs. Found
(Concentrations)

PENTAERYTHRITE TETRANITRATE (PETN)
METAL SURFACE
TARGET CONC. VS FOUND CONC.

Target Conc UG/10 SQ CM	Found Conc UG/10 SQ CM
50.000	30.200
50.000	32.400
50.000	47.400
50.000	47.800
100.000	78.000
100.000	73.500
100.000	90.800
100.000	79.600
200.000	199.000
200.000	159.000
200.000	187.000
200.000	189.000
500.000	450.000
500.000	406.000

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Table 11-134. PETN on Metal - Target vs. Found
Concentrations (Continued)

PENTAERYTHRITE TETRANITRATE (PETN)
METAL SURFACE
TARGET CONC. vs FOUND CONC

Target Conc UG/ 10 SQ CM	Found Conc UG/ 10 SQ CM
349.000	308.000
349.000	363.000
1800.000	902.000
1800.000	859.000
697.000	612.000
1300.000	1150.000

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PENTAERYTHRITE TETRANITRATE (PETN)
METAL SURFACE
ANALYSIS OF 20 TARGET-CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 359.15   SD= 382.937438205

FOUND CONC
MEAN= 313.185   SD= 328.387893672

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 5.97887894415
SLOPE= 0.855369959782
  USE FOR ACCURACY
R= 0.997458150645
MEAN SQR DEV OF POINTS FROM REGRESSION= 577.940153813
ST ERROR EST= 24.0403858915
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 49.6274158122
x(d)= 101.531895278

324

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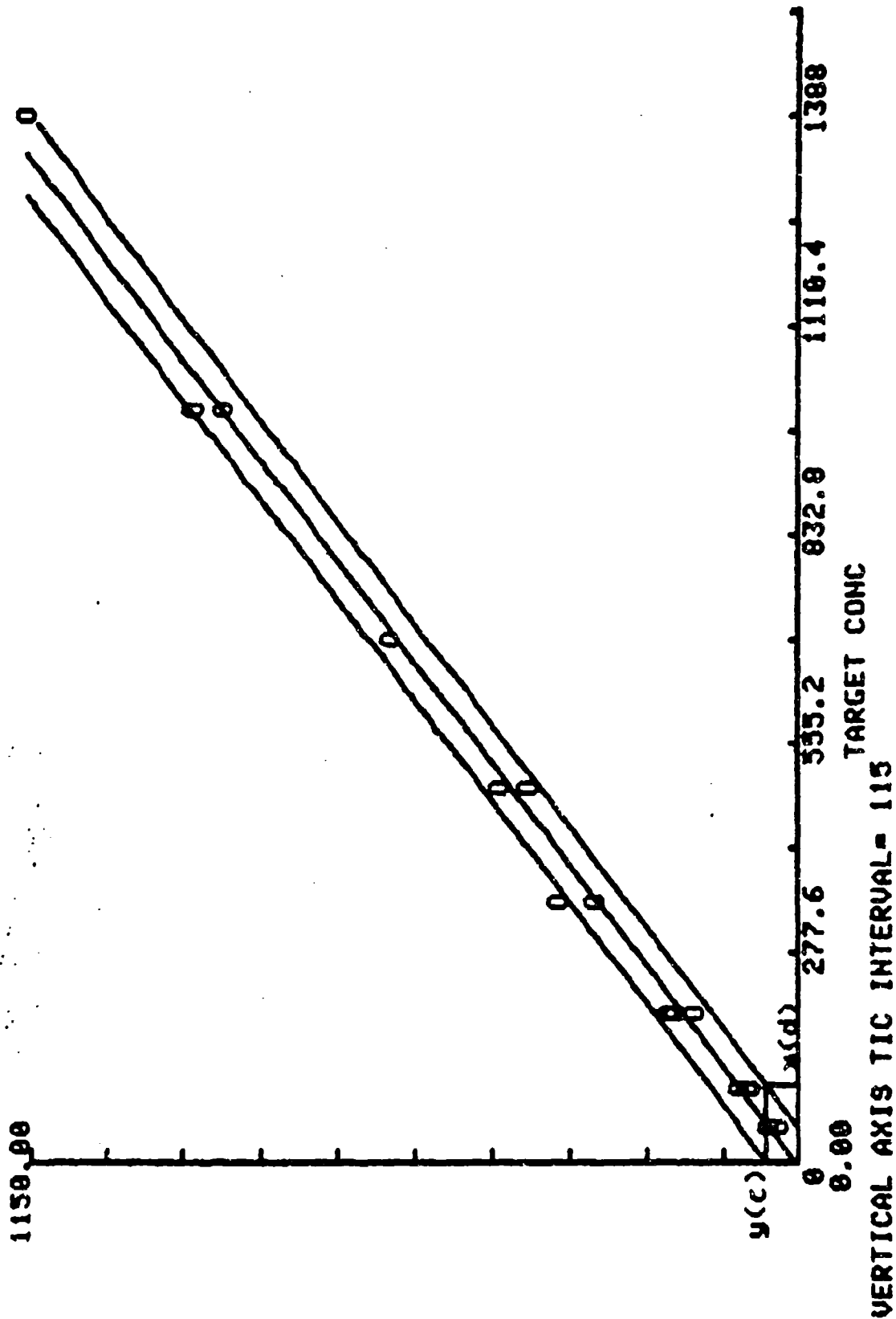
Figure 11-133. PETN on Metal – Graph of Target-Found
Concentration Points

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TABLE II-136   PETN on Concrete - Target vs. Found
Concentrations

PENTAERYTHRITE TETRANITRATE (PETN)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc UG/10 SQ CM	Found Conc UG/10 SQ CM
50.000	30.600
50.000	44.400
50.000	45.800
50.000	44.200
100.000	97.000
100.000	86.100
100.000	84.700
100.000	86.900
200.000	167.000
200.000	194.000
200.000	181.000
200.000	182.000
349.000	323.000
349.000	292.000

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PENTAERYTHRITE TETRANITRATE   (PETN)
CONCRETE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc UG/ 10 SQ CM	Found Conc UG/ 10 SQ CM
349.000	300.000
349.000	304.000
697.000	583.000
697.000	610.000
697.000	603.000
1388.000	1140.000

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PENTAERYTHRITE TETRANITRATE (PETN)
CONCRETE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 313.75   SD= 333.434578922

FOUND CONC
MEAN= 270.335   SD= 276.82953766

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= 10.0941892935
SLOPE= 0.829452783128
    USE FOR ACCURACY
R= 0.999056184483
MEAN SQR DEV OF POINTS FROM REGRESSION= 152.635268141
ST ERROR EST= 12.3545646682
    USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 32.5286725913
x(d)= 53.9135179075

328

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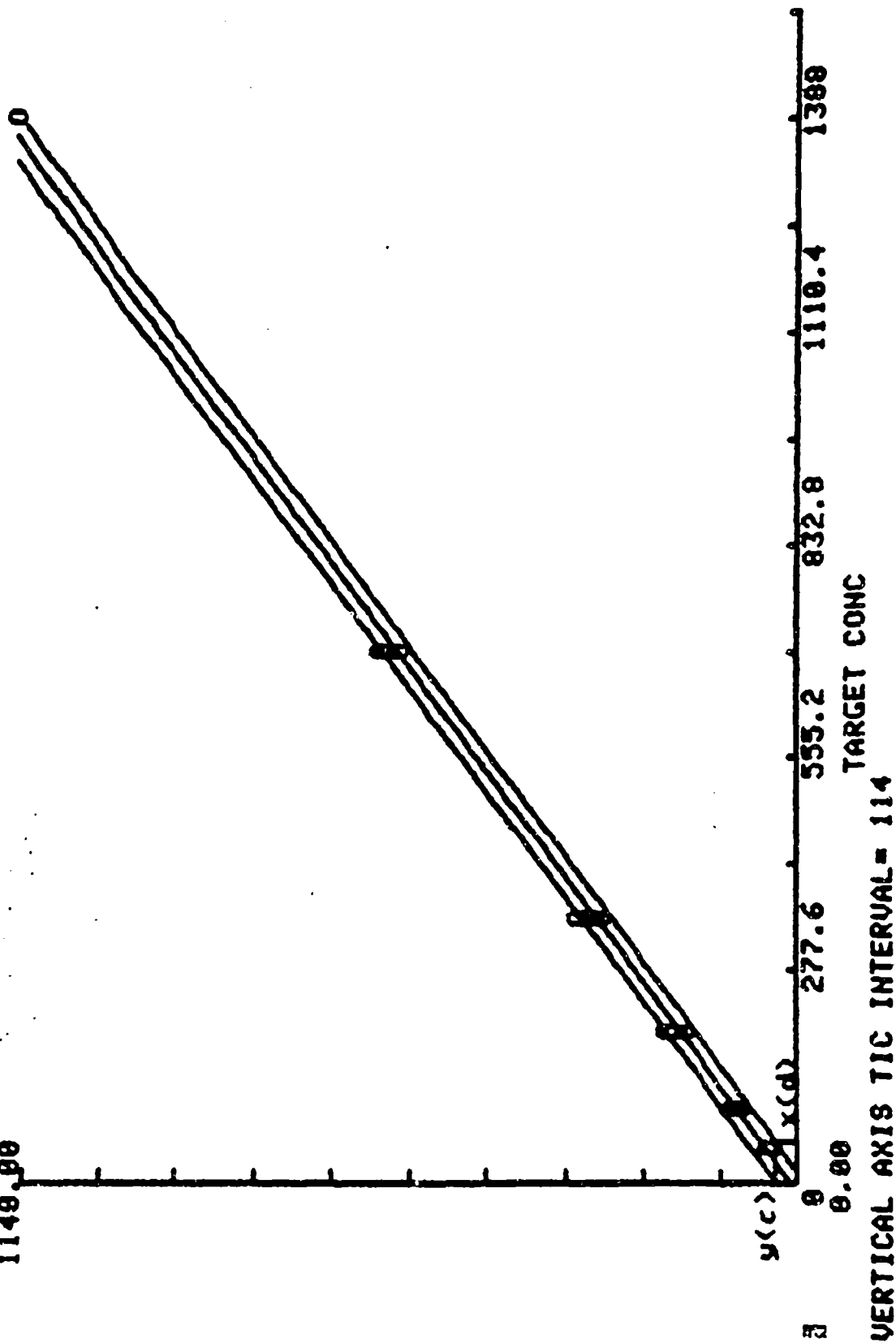PENTAERYTHRITE TETRANITRATE (PETN)
CONCRETE SURFACE
FOUND CONC

Figure II-i34. PETN on Concrete – Graph of Target–
Found Concentration Points

TABLE II-138   PETN on Brick – Target vs. Found
Concentrations

PENTAERYTHRITE TETRANITRATE   (PETN)
BRICK SURFACE
TARGET CONC vs FOUND CONC

Target Conc UG/10 SQ CM	Found Conc UG/10 SQ CM
50.000	39.700
50.000	25.000
50.000	26.400
50.000	22.200
100.000	70.400
100.000	47.200
100.000	52.800
100.000	47.200
200.000	112.000
200.000	100.000
200.000	97.100
200.000	181.000
500.000	364.000
349.000	184.000

Table 11-138. PETN on Brick - Target vs. Found
Concentrations (Continued)

PENTAERYTHRITE TETRANITRATE (PETN)
BRICK SURFACE

Target Conc UG/ 10 SQ CM	Found Conc UG/ 10 SQ CM
349.000	168.000
349.000	188.000
1000.000	677.000
697.000	425.000
697.000	357.000
697.000	345.000

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PENTAERYTHRITE TETRANITRATE (PETN)
BRICK SURFACE
ANALYSIS OF 20 TARGET.CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 301.9   SD= 277.200079745

FOUND CONC
MEAN= 172.05   SD= 174.438034542

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -14.2223284125
SLOPE= 0.617000094112
  USE FOR ACCURACY
R= 0.988476968454
MEAN SQR DEV OF POINTS FROM REGRESSION= 1241.88252912
ST ERROR EST= 35.2403537031
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 50.2303186945
x(d)= 206.251664127

332

PENTAERYTHRITE TETRANITRATE (PETN)
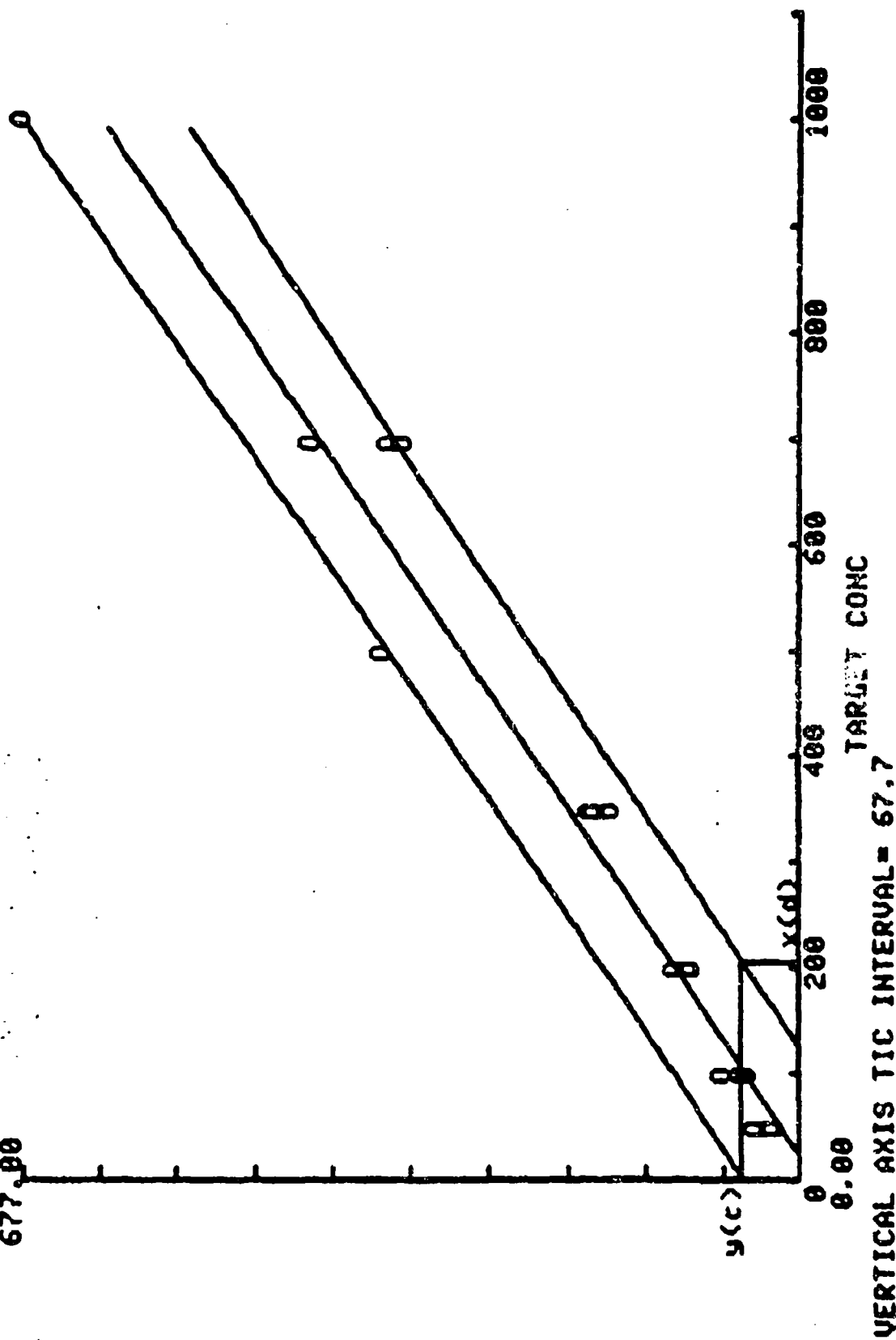BRICK SURFACE
FOUND CONC

677.00

Figure 11-135. PETN on Brick - Graph of Target-Found
Concentration Points

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TABLE 11-140   PETN on Transite - Target vs. Found (concentrations)

PENTAERYTHRITE TETRANITRATE   (PETN)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc UG/ 10 SQ CM	Found Conc UG/ 10 SQ CM
50.000	30.400
50.000	38.600
50.000	38.100
50.000	48.800
100.000	61.300
100.000	88.900
100.000	77.200
100.000	88.900
200.000	110.000
200.000	167.000
200.000	152.000
200.000	164.000
500.000	360.000
349.000	239.000

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PENTAERYTHRITE TETRANITRATE (PETN)
TRANSITE SURFACE
TARGET CONC. VS FOUND CONC

Target Conc UG/18 SQ CM	Found Conc UG/18 SQ CM
349.000	288.000
349.000	299.000
1000.000	801.000
697.000	525.000
1000.000	864.000
1388.000	1158.000

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PENTAERYTHRITE TETRANITRATE (PETN)
TRANSITE SURFACE
ANALYSIS OF 20 TARGET CONC-FOUND CONC POINTS

TARGET CONC
MEAN= 351.6   SD= 381.500141409

FOUND CONC
MEAN= 276.96   SD= 312.148352719

NO. RUNS 1 TOTAL X-Y ALL RUNS 20 NO. CONCENTR 20
MEASURES (Y'S) EACH TARGET CONC 1

INTERCEPT= -10.0036586066
SLOPE= 0.81616518411
  USE FOR ACCURACY
R= 0.997497183375
MEAN SQR DEV OF POINTS FROM REGRESSION= 514.183809356
ST ERROR EST= 22.6756214767
  USE FOR PRECISION
T FOR CONFIDENCE BAND
D.F.= 18
TWO TAIL P LEVEL IS .1
t= 1.73406096408
X(D) FOR CALIBRATION CURVE OR UNKNOWN SAMPLE? C/U C
y(c)= 31.1370879006
x(d)= 100.308711628

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PENTAERYTHRITE TETRANITRATE (PETN)
TRANSITE SURFACE
FOUND CONC
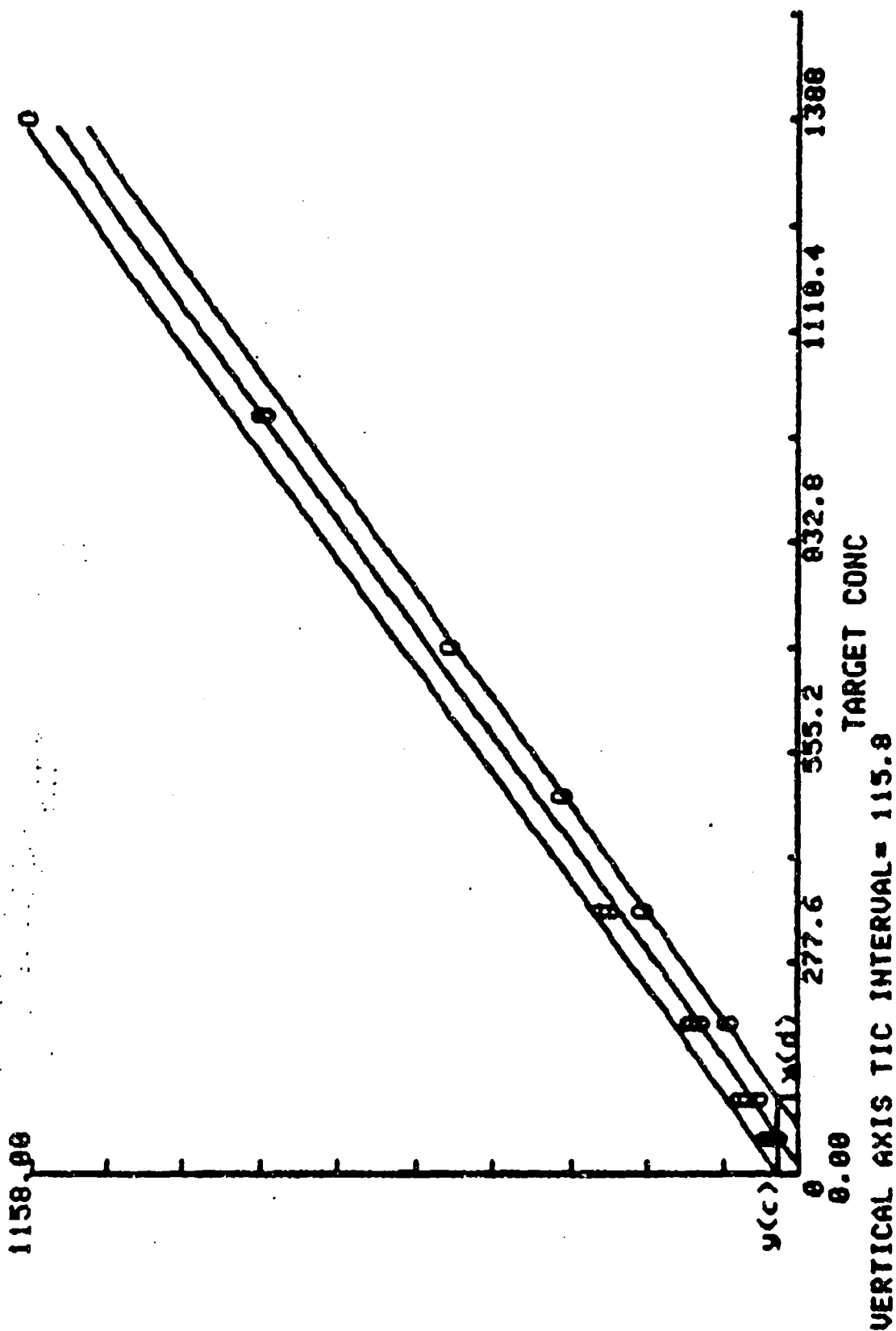
TARGET CONC

VERTICAL AXIS TIC INTERVAL= 115.8

Figure II-136. PETN on Transite – Graph of Target–Found
Concentration Points

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